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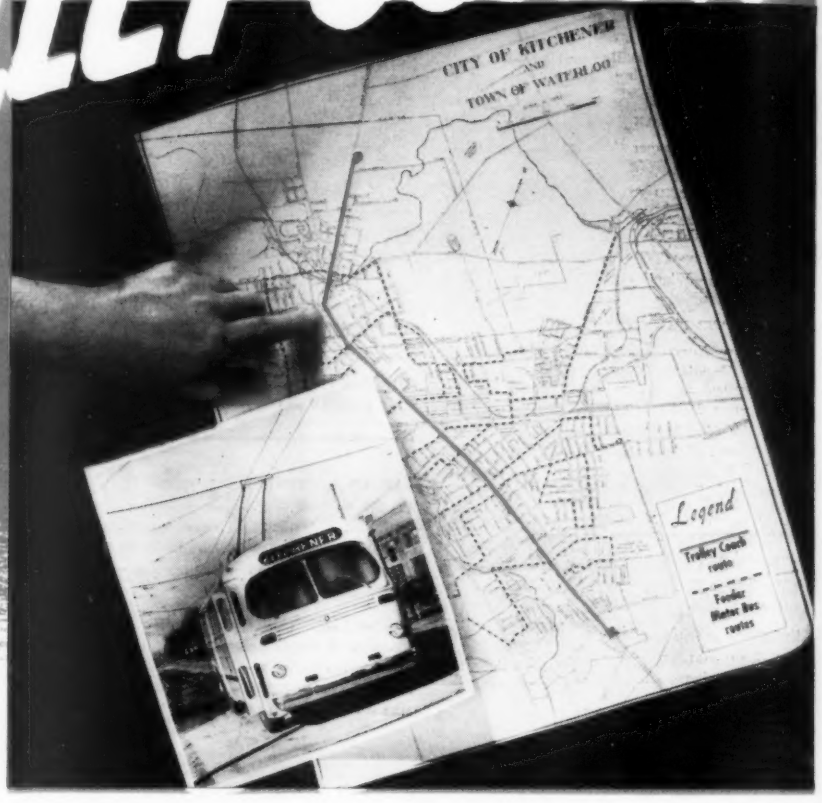
THE MUNICIPAL INDEX AND ATLAS, used in connection with the current advertisements in THE AMERICAN CITY, places local officials in the most favorable position to obtain all types of available equipment and supplies from manufacturers who desire to serve municipal government departments. This 750-page annual is published by The American City Magazine Corporation, 470 Fourth Avenue, New York 16, N. Y.

See pp. 21, 23, 24, 26, 28, 135, 137, 139, 141 for catalogs and publications on municipal and civic subjects.

List of coming conventions, page 131. **Index to Advertisements, page 176.**

The TROLLEY COACH comes to Kitchener and Waterloo, Ontario



In January this year the Kitchener Public Utilities Commission converted its main transit line from street car to trolley coach operation. The line, which covers nine round trip miles, furnishes service for both Kitchener and Waterloo, Ontario. The combined population for the two communities served is 45,000.

Ten 44-passenger trolley coaches were placed in operation when the changeover was made. They met with such a high degree of public acceptance that, within a short time, it was necessary to order five more to take care of the increased patronage. Although these additional vehicles have not been delivered to date, the original 10 rubber-tired electrics have increased riding 15 per cent on this line.

There are many reasons why the Kitchener Public Utilities Commission decided to operate trolley coaches on its heaviest traveled transit route. To put it in the words of an official spokesman for the Commission —"After investigating the merits of several different types of public transit vehicles, trolley coaches were selected for main line operation because . . .

"THEY ARE ECONOMICAL TO OPERATE.
"THEY ARE GOOD REVENUE EARNERS.
"THEY HAVE HIGH RIDING APPEAL.
"THEY ARE EASILY MANEUVERED IN TRAFFIC.
"THEY ARE SILENT, SPEEDY AND SAFE."

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LINE MATERIAL AND CAR EQUIPMENT
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Our Municipal Notebook

Flood Devastation—Prevention the Only Cure

THE inhabitants of city after city along the Missouri and upper Mississippi valleys have endured great property losses, personal suffering, and inconvenience as the result of the recent heavy floods. One survey of official estimates reported that the surging waters had caused damage of at least $850,000,000 to midwest land, crops, and urban areas. This is far more than twice the Federal Government's $350,000,000 foreign-relief program.

Well-planned flood-control works elsewhere proved their worth in holding back additional inundations of water and avoiding even further damages. An article in the May issue of THE AMERICAN CITY * described recent flood-wall construction activity made possible through the provisions of the Federal Flood Control Act, in Louisville and other municipalities along the Ohio. The recent disasters along the Missouri and the Mississippi should make it apparent, however, that no one municipality acting independently can hope to cope with or to control adequately the immense force and power of rampaging flood waters.

An editorial in the *New York Herald Tribune* last month reminded *Tribune* readers of the disastrous floods which wrecked most of Dayton, much of Columbus, and other cities in Ohio in the spring of 1913. That particular watershed has been immune since then from any such repetition because the state government promptly commissioned Arthur E. Morgan, a former President of Antioch College and subsequently chairman of the Tennessee Valley Authority, to solve the problem, which he did with an elaborate series of flood-control reservoirs or catch basins.

Operations of the Tennessee Valley Authority give ample evidence that complete river control is not only possible, but has been eminently successful. A letter to THE AMERICAN CITY from W. L. Sturdevant, TVA Director of Information, stated that, "Exceedingly heavy rainfall in January of this year, without the TVA protective works, would have done damage estimated at about $7,000,000 in Chattanooga. The TVA control system reduced the crest at Chattanooga at that time by slightly over 12 feet."

Year after year, proposals for a Missouri Valley Authority have been stalled and circumvented for one excuse or another. Perhaps now it will be realized that integrated treatment of an entire valley area is the only solution toward effective harnessing and channeling of the energies of the country's mighty rivers and protecting the urban areas along their borders.

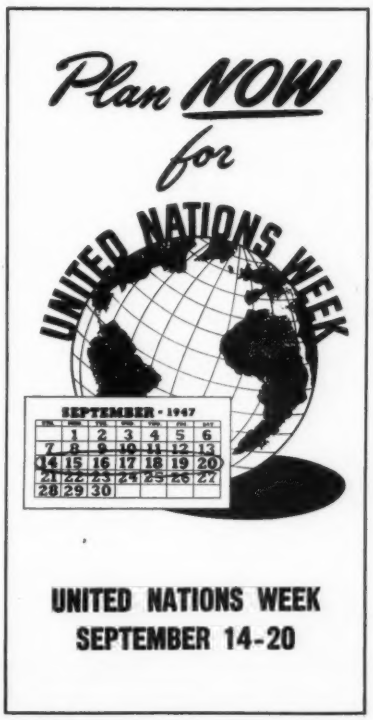
* See "No More Floods for Louisville," page 34, THE AMERICAN CITY, May 1947.

Mayors Proclaiming United Nations Week

ON this page last month THE AMERICAN CITY published the wording of a form of proclamation suggested by the American Associations for the United Nations for the convenience of mayors in urging local groups to cooperate in the observance of United Nations Week, September 14 to 20.

Several mayors have since reported that they are using this or a similar form in their local publicity. Thus represented are such large cities as Detroit, St. Louis, Cincinnati, and Kansas City, Mo., and communities of medium size such as Middletown, Conn., La Grange, Ill., and Keene, N. H.

Posters and material for use in local celebrations can be secured from American Association for the United Nations 45 E. 64th St., New York 21, N. Y.



For More Home Rule in Local Taxation

STRESSING the fact that finances remain the basic plague of most of our municipalities, Mayor Francis H. Blake of the village of Albion, N. Y., speaking on June 18 as President of the New York State Conference of Mayors and Other Municipal officials, urged that legislatures cease to treat cities and villages as though they were little children asking for more candy money.

"If," said Mayor Blake, "the cities and villages, which are closer to the people than any other unit of government, cannot be trusted with adequate taxing powers, then it is certain that no government should have these powers. In most cities and villages it is not the officials who tax the people, but the people who tax themselves."

Three basic inhibitions and habits that are causing our municipalities difficulty were discussed at the same meeting by Mayor William Hart Hussey, of Mount Vernon, N. Y., Vice-president of the Conference. These were: (1) the hesitancy or the refusal of the legislature to grant adequate financial home-rule powers to our cities and villages or even to recognize their revenue difficulties; (2) the granting of privileges to one group of municipalities and withholding these privileges from another group, and (3) for the state administration to mandate actions by the municipalities without being ready to finance these mandates.

A.A.A. Condemns Insanitary Rest Rooms

SANITARY conditions in many of the comfort stations available to the motoring public are enough "to make a Neanderthal man shudder and rush for fresh air," it was charged last month by the American Automobile Association, in a protest sent to oil company executives, oil and gasoline dealer associations, and city and state health authorities all over the country.

The statement termed the general situation little short of a national disgrace, and a positive menace to the health of millions of highway users. It called for an immediate house-cleaning by service station owners, managers, restaurateurs, and others, who provide such facilities for the traveling public.

"Reports from all over the country," the protest said, "indicate that public

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This means compact, efficient operation and it also helps to keep a friendliness and a neighborliness in the conduct of the telephone business.

The Bell telephone people in your community aim to be good citizens in all things, in addition to giving you good and economical telephone service.

BELL TELEPHONE SYSTEM

indignation is growing over the increasing number of littered, spattered, dank, and ill-smelling rooms that are provided for the 'convenience' of tourists. These 'discomfort' stations and 'unrest' rooms frequently have stopped-up plumbing, broken water faucets, dirt-encrusted wash bowls, soapless dispensers, and a total lack of paper towels and tissue, and some of them are infested with all manner of crawling and winged creatures."

While admitting that some owners and some of the oil companies make continuing efforts to maintain clean, sanitary establishments, the A.A.A. called on the others to take immediate recourse in a little initiative, backed up by soap and water, paint, disinfectant, and "some elbow grease, regularly and vigorously applied."

No Substandard Areas for Scarsdale, N. Y.

REEVES NEWSOM, Village Manager of Scarsdale, told the 1947 New York State Conference of Mayors and Other Municipal Officials that there are no substandard areas in that village. For this happy condition Mr. Newsom gives credit to the fact that, throughout the years of development, front-yard and side-yard setbacks, strict building and plumbing regulations, and the guiding hand of a Planning Commission of capable citizens interested in the welfare of the village prevented the forming of local trouble spots of various sizes and kinds, such as are customarily found in a community and which make zoning so difficult.

The powers of the Planning Commission, in its early days, and the provisions of the first editions of the zoning and building codes [said the Scarsdale Manager] were not, of themselves, comprehensive enough or strict enough to be the sole answer to the maintenance of the village to its existing high standard. The cooperation of developers who were broadminded enough to realize that the maintenance of high standards, in the long run, accrued to their benefit, was also largely responsible for carrying the spirit of the relevant laws and ordinances even beyond the requirements of the letter of these instruments. In a large proportion of cases, restrictions were placed in deed of conveyance which controlled the size, cost, and/or design of houses to be constructed. In a number of situations, associations were formed, the members of which, in various percentages, had to give permission before large estates could be subdivided into smaller parcels.

Because of the fact that many deed restrictions are expiring the Village of Scarsdale has considered it necessary to attempt insofar as possible to provide in its zoning ordinance an adequate substitute. To this end the Village has recently revised its zoning ordinance and has included restrictions for the minimum size of lots upon which future houses may be built. These minimum lot sizes range from 5,000 square feet to one acre in area.*

For Better Local Labor Relations

MAYORS and other public officials who seek to promote harmony between management and labor in local industries can secure helpful ideas from the American Management Association, 330 West 42nd St., New York, N. Y. The following for example, is an excerpt from an address by Rodney Chase, Director of Public and Industrial Relations of the Chase Brass and Copper Company, Waterbury, Conn., given before an A. M. A. meeting on June 12:

What is the basic reason for the astonishing success and prosperity of America? The prosperity of America does not depend entirely upon its resources, or on the willingness of its workers. It depends primarily on the existence of an American system of democracy in which American business can thrive and prosper.

And the growth of American business has been and will continue to be dependent on making more and more products that sell for less and less money.

To make such improvements, American business must be allowed to make profits to provide the necessary money. Stockholders must receive a reasonable interest on their investment. The public must get better products at lower prices. And the American worker will get higher wages as he becomes more productive through his own efforts, through the efficient use of his time and skill, and particularly through better machines and better methods.

Prosperity for everyone is possible if we put these economic truths into practice. This is the truth that we must tell America.

Newark Plan Adopted

THE Master Plan of the City of Newark, described in the May issue of THE AMERICAN CITY, was officially adopted by the Planning Board on July 10. Harry W. Alexander, resident planner for Harland Bartholomew and Associates, reports this as the first instance in New Jersey where a municipality has adopted a Master Plan in accordance with the procedure set up by the State Law.

* See page 137 for reference to the new Scarsdale Zoning Ordinance.

† See "Nearly A Quarter Billion in a Quarter Century," by John R. Burnett, pages 90-91, THE AMERICAN CITY, May 1947.

Onion Juice Fights Ragweed

THE addition of onion juice to 2,4-D chemical solution, used in spraying ragweed areas as a relief measure for hayfever sufferers, has been reported as making the solution more potent and effective. Rochester, N. Y., is one municipality that has wasted no time in using such a fortified solution for its ragweed control program this summer.

Experiments conducted by Drs. E. H. Lucas and C. L. Hamner, of the Agriculture Experiment Station at Michigan State College, first suggested that certain vegetable juices when combined with 2,4-D would have an effect on the action of the chemical solution. Further work is now in progress along these lines. A preliminary report, published by the College,* gave some specific data on experiments conducted with aqueous extracts of the Michigan sweet Spanish onion and 2,4-D. These showed significant increases in the herbicidal action of the 2,4-D.

Philip Gorlin, Inspector in the New York City Bureau of Sanitation and author of a recent article in THE AMERICAN CITY† on municipal ragweed campaigns, suggested that a sample formula incorporating the new findings would be as follows:

1¼ pounds	2,4-D sodium salt (70% 2,4-D equivalent)
4 gallons	onion juice
96 gallons	water
100 gallons	fortified 1,000 ppm. 2,4-D solution

Care must be taken that too much onion extract is not added, or its activating effect will be lost.

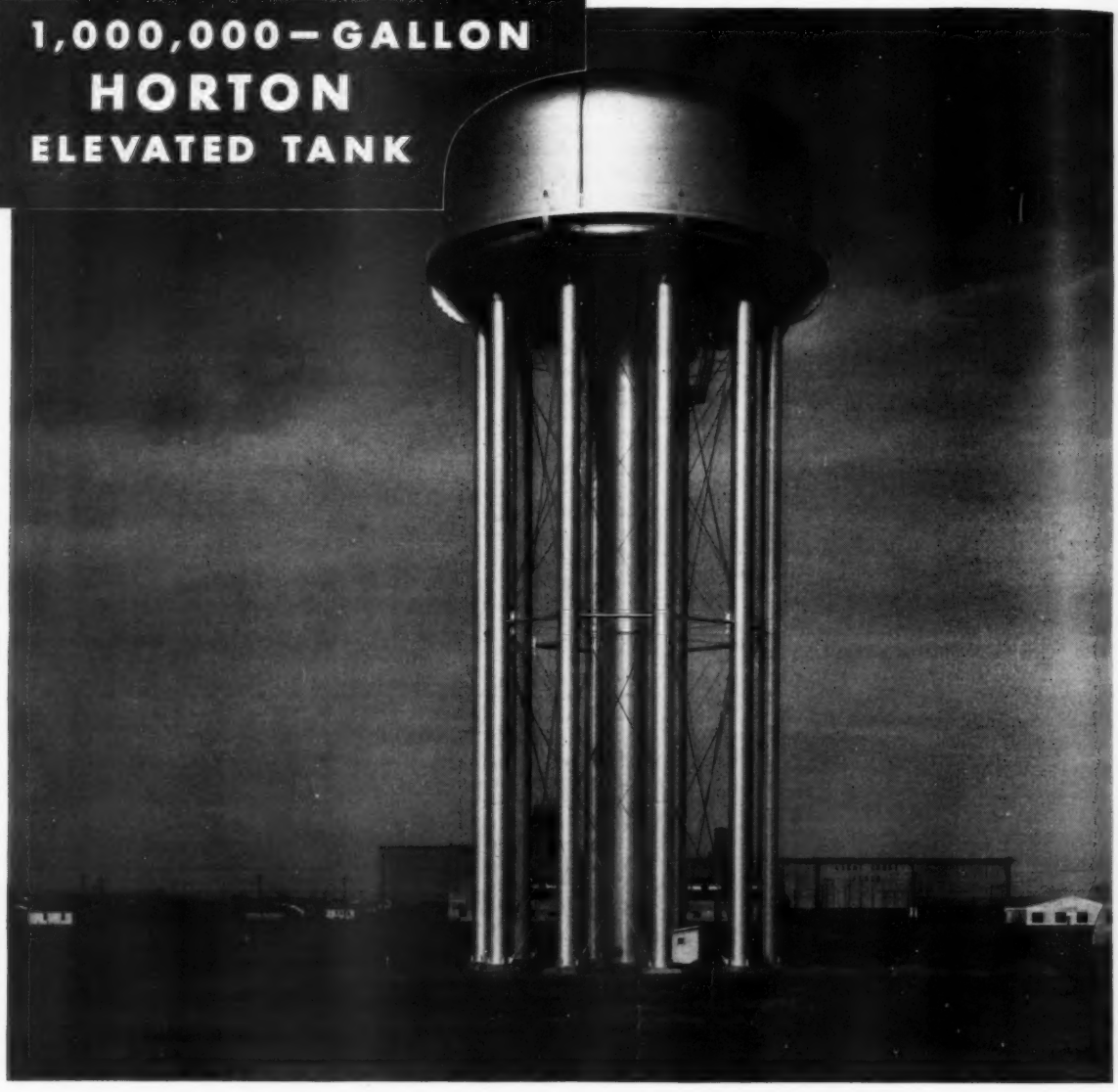
There is still some doubt as to whether municipalities are justified in adding onion juice to 2,4-D solutions from a financial point of view, Mr. Gorlin stated. He pointed out that ragweed and giant ragweed can be effectively destroyed by dilute 2,4-D solutions without any additions, and that if "strengthening" is necessary, it is probably cheaper to simply add more of the 2,4-D salt.

Mr. Gorlin further stated that municipalities interested in establishing separate weed control units to eradicate poison ivy, marijuana, poison sumac, and other more resistant growths, as well as ragweed, might find that the 2,4-D with onion juice would be more effective.

* Vol. 29, Number 3, Feb., 1947, *The Quarterly Bulletin*, Michigan State College, Agricultural Experiment Station, East Lansing, Mich., pp. 256-262.

† See THE AMERICAN CITY for June 1947, "Planning and Organizing a Ragweed Control Program," page 88.

1,000,000—GALLON HORTON ELEVATED TANK



. . . part of the distributed storage picture at Amarillo, Texas

DISTRIBUTED storage in large-capacity Horton elevated tanks *pays dividends* in many municipal water supply systems. The 1,000,000-gal. tank shown above was recently erected at Amarillo, Texas, as part of a well-planned distributed storage program for that city. It is 129 ft. to bottom and has a 35-ft. range in head. The riser of the tank is 8 ft. in diam.

In addition to providing gravity pressure to meet peak load demands in the area in which it is located—a *large-capacity* elevated tank can prevent the area it serves from drawing too heavily on the transmission mains during such periods. This releases a portion of the capacity of the transmission mains to serve other sections of the city.

Adequate storage capacity, well distributed throughout a municipal water supply system, provides improved pressures in all areas. Water works engineers and city officials who recommend large-capacity elevated water tanks for municipalities provide other benefits for the city such as a reserve of water for fire protection and provision for pumping during off-peak periods.

Write our nearest office for quotations on Horton elevated water tanks when planning *better* water service for *your* city.

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New York 6.....3308—165 Broadway Bldg.
Cleveland 15.....2236 Guildhall Bldg.
Los Angeles 14.....1403 Wm. Fox Bldg.
Chicago 4.....2127 McCormick Bldg.
San Francisco 11....1233-22 Battery Street Bldg.
Philadelphia 3...1616-1700 Walnut Street Bldg.
Atlanta 3.....2114 Healey Bldg.
Havana .....402 Abreu Bldg.
Detroit 26.....1501 Lafayette Bldg.

Plants in BIRMINGHAM, CHICAGO and GREENVILLE, PENNSYLVANIA

Water and Sewage Works Men Conclude National Meeting

By WILLIAM S. FOSTER
Engineering Editor
The American City

IN recognition of the problems common to both water and sewage works, the American Water Works Association met jointly last month, for the first time in its history, with the Federation of Sewage Works Association for the annual meeting of both technical organizations. The meeting, held in San Francisco's Civic Auditorium, July 21 to 25, broke attendance records with 1,546 water works and 964 sewage works registrants. Omitting duplicates, the total was 1,955, including 555 manufacturers' representatives.

Surface and Ground Water Supplies

The meeting opened July 21 with a discussion of an unusual surface water supply and of an equally unusual gound water supply. S. B. Morris, chief engineer and general manager, Department of Water and Power, Los Angeles, and former AWWA president, told of the surface supply—the Colorado River—which he described as the Southwest's greatest water and power resource. California, he stated, in partnership with other states, has built a great dam on the river that has allowed interstate trade to flourish; the government likewise has benefited by the construction of this huge improvement that has been economically profitable, and the resources of the river have barely been tapped. Many dams need yet to be built to further control floods, to irrigate additional lands, and to supply added electrical energy.

The unusual ground water supply was covered by Frederick Ohrt, manager and chief engineer, Board of Water Supply, Honolulu. Honolulu obtains its water supply from rainfall on an inland mountain area. The water passes through water-bearing rock and then flows outward in arterial basins under the city business district. The water-bearing rock consists of permeable lava from geologically recent volcanic eruptions. In the coastal plains is an impervious caprock, one or two miles in width, which confines the water in the porous lava. The water is confined at the base by the sea itself, since the salt water is approximately 41/40th as heavy as the fresh. Consequently about 1/40th of the fresh water floats above the sea level.

To draw water from these underground reservoirs floating on the sea, Honolulu uses skimming tunnels that skim off the surface of the water without disturbing the lower portion where it joins with the salt water of the ocean. To reinforce the supply, Honolulu has embarked on a program of recharging its water supply by diverting water from certain watersheds into horizontal tunnels driven into the base of the valley walls. These tunnels will be driven into the lava flows which make up the water-bearing formation.

Pressure Tanks

The use of pneumatic pressure tanks to strengthen distribution systems where pressure from gravity tanks is low was explained by O. G. Goldman, assistant superintendent of the San Francisco Water Department. Mr. Goldman outlined design principles for tanks located both vertically and horizontally, and also showed how spherical tanks could be used if needed. He pointed out that the pneumatic pressure tanks work most efficiently when the ratio of air to water is great. He also stated that the pumps should be able to meet the maximum hourly requirements of the district served and that the air compressor requirements are scarcely a factor in the economics of the system. Pressure systems, he stated, should be confined to relatively small districts, probably of no more than 200 families.

Plant Financing

An analysis of plant financing keynoted the plant management division meeting Monday afternoon. The meeting was led off by a study of recent revenue bond legislation by L. N. Thompson, general manager, Water Department, St. Paul, Minn., and followed by a paper discussing experiences in revenue bond financing by Steven B. Robinson, attorney, Los Angeles. Mr. Robinson stated that he has found water bonds easier to sell than power, and power bonds easier to sell than sewer revenue bonds, because of the respectively longer operating history of each.

Water Rate Increase Study

This paper was followed by a comprehensive analysis of how rate structures should be adjusted to meet rising cost levels, by L. R. Howson, consulting engineer, Alvord, Burdick and Howson, Chicago. Mr. Howson's conclusion was that water rate structures should be raised by 30% in order to maintain present service standards. He supported this contention by showing that water supply is a combination of commodity and transportation.

Pre-war water works spent $7.35 per customer for new construction and $7.30 for fixed charges and other fixed operating costs. Recent wage increases have reduced the value of this $14.65 total to approximately $9.95 per customer. If the $7.30 remains fixed, there remains only $2.65 for new construction. To provide pre-war $7.35 per customer for new construction would now cost approximately $12.00, or $9.35 over the amount presently available. This $9.35 represents 29.2% of the 1945 gross revenue.

The construction costs for the next decade, Mr. Howson feels, should be based on figures 60 to 75% above 1939. Rate increases, he recommends, should be large enough to meet the needs amply when public psychology is favorable; however, they should not be so large that they will make independent supply economical to certain large users.

Water Main Extensions

A panel on water main extension policy included M. P. Hatcher, director, Water Department, Kansas City, Mo., Carl M. Hoskinson, superintendent and chief engineer, Division of Water and Sewers, Sacramento, Calif., L. S. Finch, chief engineer, Indianapolis Water Co., John H. Murdoch, Jr., attorney, American Water Works and Electric Co., New York, and W. V. Weir, president, St. Louis County Water Co., University City, Mo. The panel outlined the following:

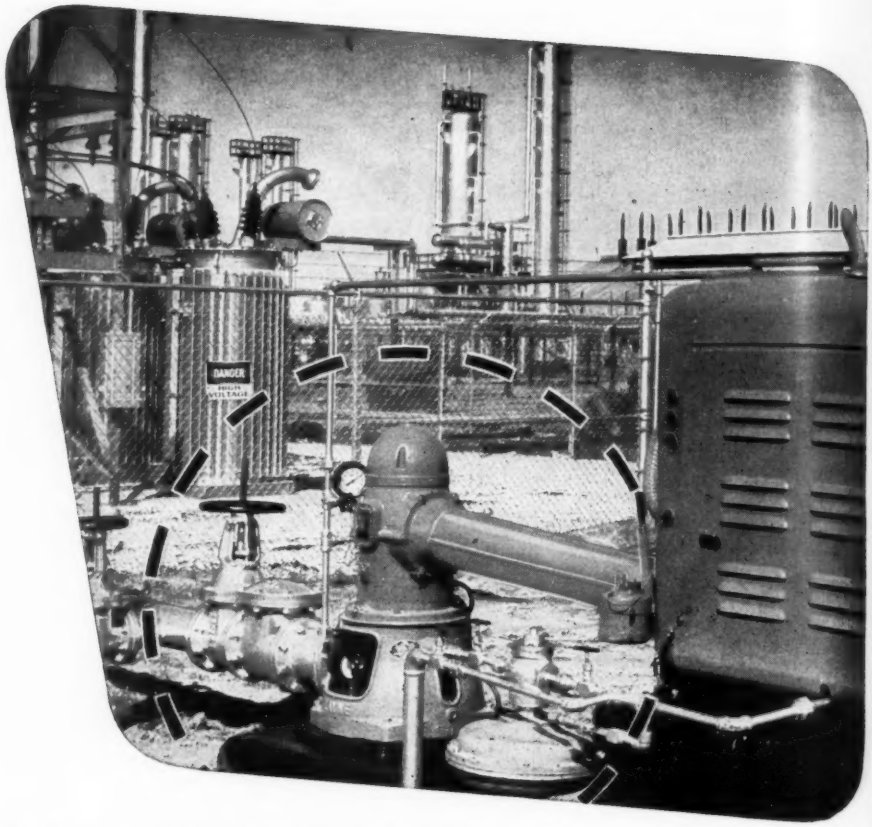
1. Extension rules should not favor new customers to the extent of necessitating increased cost to the old customers.
2. New customers should be enabled to obtain water extensions and service at the lowest cost, but without subsidy from the rest of the system.
3. Generally, revenue from a new customer should exceed the cost of supplying water, including carrying charge on the plant and general property and large mains used in supplying him.

Water Purification

The important subject of selecting and controlling sampling points in a distribution system came under scrutiny by K. W. Brown, consulting engineer, San Francisco, Calif., Monday afternoon in the Water Purification division. In small systems, Mr. Brown stated, random samples may be taken at convenient locations; however in larger systems, the locations may be governed by population density, multiple sources of supply, possibilities of cross connections, and pressure zones.

Adding to the meeting by the purification division was a paper by C. K. Calvert, Indianapolis Water Co., on why and how to disinfect water mains, and a preliminary report on open-air reservoirs by N. J. Howard, director, Water Purification, Toronto, Canada. A paper on macroscopic organisms in public water supplies by J. C. Weart and C. W. Klassen, both of the Illinois Department of Health, showed why

(*Continued on Page* 17)



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Yes, we are proud of this picture — and several thousand others of Layne Well Water Systems now serving Municipalities, Railroads, Factories, Chemical Works, Packing Plants, Paper Mills and Air Conditioning and Irrigation projects.

We know the penalty of leadership in our chosen field, the flattery of imitation and the real satisfaction of serving the same customers for generations and generations. Our equipment and services are consistently higher in quality than the buyer demands — more dependable than we promise—and longer lasting than the owner expects.

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Street Cleaning and Refuse Disposal

Street Cleaning in Dayton

IN Dayton, Ohio, approximately thirty percent of street dirt comes from controllable sources, such as overloaded coal, dirt, and refuse trucks, overflowing refuse receptacles, house and store sweepings; but the greatest source of street litter today is paper.

The best time to clean and sweep the downtown or business section is between the hours of one o'clock and nine o'clock a.m., since there are fewer parked cars and less traffic at that time. The outlying sections can be cleaned very successfully during the daytime. Both hand and power sweeping methods are used throughout the city.

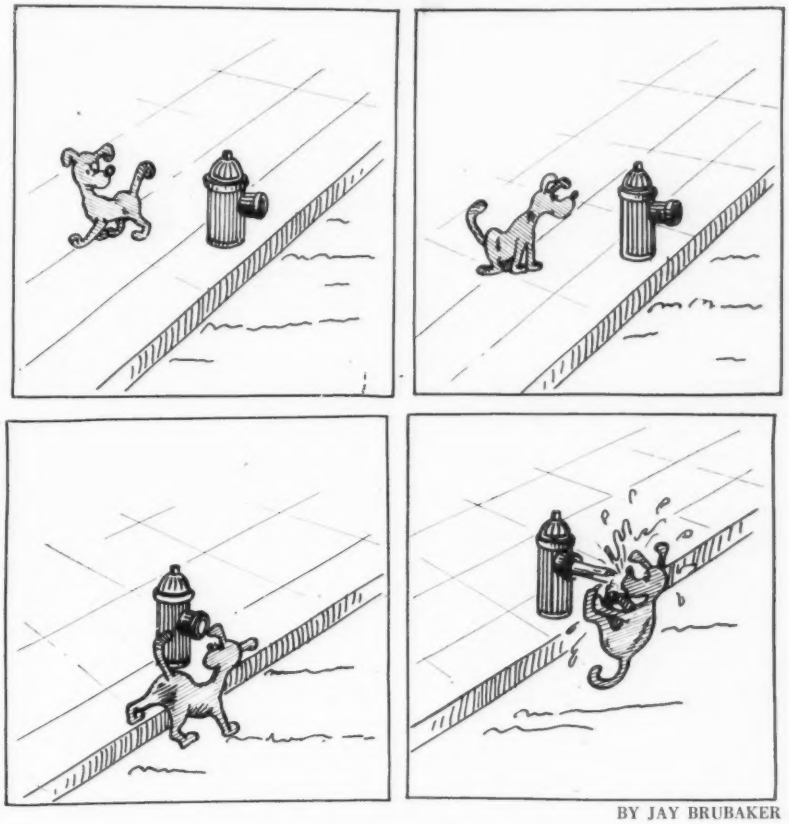
During the past year, 8,720 curb miles of street were cleaned by power sweepers collecting 4,971 cubic yards of dirt, and the hand cleaning amounted to 3,654 cubic yards, all of which was hauled by trucks to the nearest city dump.

The cleaning of the four city markets amounted for the year to 1,642 cubic yards of refuse hauled to the city incinerator.

Cleaning the streets of leaves in the fall is a large item. They are hauled to the nearest gardener, florist, or nursery, where they are used as fertilizer.

There are always problems to be overcome by the street-cleaning service in cleaning a city effectively, such as seasonal problems, parking problems, climatic conditions, type and condition of the pavement, and the effort is constantly being made to accomplish the best and most efficient cleaning system that is possible.

EVERETT F. BALON
Supervisor of Street Cleaning



BY JAY BRUBAKER

Clean Streets for Allentown

Clean streets will be less of a problem now that the Allentown, Pa., Street Department has an Elgin street sweeper.

A Year-Round Job for Winter Equipment

Schenectady, N. Y., is another city that puts its winter equipment to work when the snow is off the ground. Here is a Model LTR Snogo on a Ford Marmon Herrington All-Wheel-Drive chassis, loading sweeper refuse.

The Department Store Idea

When you think of a Ryerson Plant, picture a huge department store featuring all kinds and shapes of steel. In place of the ordinary sales personnel, think of a large staff of experienced steel men—a sales department that's been carefully trained to guide your steel purchasing—to see that you get the exact steel you need for the job at hand.

And, when you think of Ryerson Steel-Service, think of a smooth-flowing system of steel supply that eliminates every unnecessary delay between order desk and point of delivery. Think of the most modern steel storing, cutting and shipping methods —methods based on more than a century of performance. And remember that Ryerson Steel-Service functions with the same efficiency and promptness whether your order calls for pounds or tons.

Naturally, today's great demand for steel frequently unbalances our stocks. But if the steel you need is not immediately available, we'll gladly do everything possible to supply you with a practical alternate.

What does it all add up to? Well, just about the last word in steel-buying convenience. And it's all yours when you contact a Ryerson Plant for any steel requirement.

•

Joseph T. Ryerson & Son, Inc. Plants at: New York, Boston, Philadelphia, Detroit, Cincinnati, Cleveland, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles.

RYERSON STEEL

Street Construction & Maintenance

The First All-Electric Asphalt Plant

WHAT city can rightfully claim the first all-electric asphalt plant? The big new Standard plant out in Los Angeles gives this city what it feels is rightful claim to this title. (See page 96.) However, St. Louis' all-electric Simplicity plant, capable of producing 1,000 tons of mix per day and kept as clean as a well-kept dairy, may have a right to challenge this statement.

St. Louis, however, forfeited its right to claims for an "all"-electric plant after the Department of Streets and Sewers had operated it for a year. Officials decided that its storage capacity of 17,500 gallons was not enough, and they bought three additional tanks giving an over-all storage of 60,000 gallons. The three tanks have coils in them as well as gas heaters under them. The coils are rarely used; but Street Commissioner Henry W. Dawson reports that he keeps a small flame under the tanks to keep them warm. The material from these tanks works by gravity into the original tanks, where it is electrically heated and pumped into the mixer for use.

Thus one can say that St. Louis' plant poses a challenge to the Los Angeles assertion—a challenge somewhat invalidated by a small flame under each of three storage tanks not in the original installation.

Road Builders Plan Nine-Day Show

HOW to make the taxpayer's dollar go farther will be the keynote of the 1948 Road Show to be held by the American Road Builders Association, in Soldier Field, Chicago, Ill., from July 16 through the 24th.

In answer to the high cost of labor and materials, manufacturers are developing and will show new time- and labor-saving machines to help reduce the expense of construction. According to J. T. Callaway, President of the ARBA, much of this equipment will have its first showing at this exposition.

The last road show was held eight years ago before an estimated audience of 45,000. Previous shows lasted four or five days, but contractors, engineers, highway officials, and others have expressed a desire to study carefully the long strides taken by the construction equipment industry in almost a decade. Representatives of more than thirty foreign countries will be present.

In Anchorage, Alaska, a Caterpillar diesel 212 grader smooths Christenson Road. Anchorage has about 40 miles of roads, which are maintained by this grader.

How to Estimate Soil-Cement Densities

YOU can save a lot of time in your laboratory work by intelligently estimating at what point the optimum moisture content and maximum density will be reached. Here are some pointers that the Portland Cement Association has to offer on this subject.

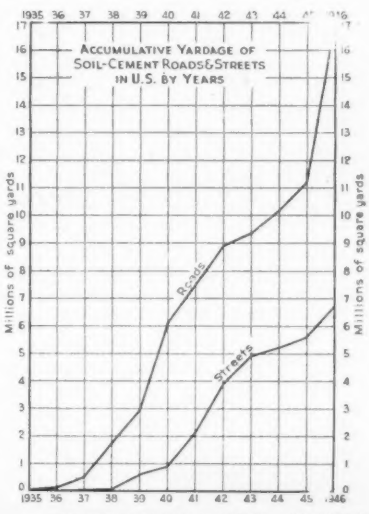
First, if you guess approximately where the optimum moisture content will be, you should get a well-balanced curve with only four or five trials. But a close estimation of maximum density is the more important factor governing the actual content obtained by volume.

You will find that the maximum density of a soil-cement mixture is influenced mainly by the sizes and percents of the individual soil grains. A well-graded sandy soil-cement mixture, high in sand and low in clay content, may have a maximum density as high as 135 pounds per cubic foot. A heavy clay, poorly graded, high in clay content and high in voids, may have a density as low as 85 pounds per cubic foot.

A moisture-density curve on the soil alone is also an indication of the maximum density and optimum moisture content for a corresponding soil-cement mixture. Generally, the density of sandy soil-cement mixtures will be 2 to 4 pounds higher than for the soil alone. The maximum density for clay and for clay soil-cement mixtures will be about the same. The optimum moisture contents of soil-cement mixtures will be about the same as for the soils.

The following table gives average values for soil-cement mixtures made from soils of several textural classifications:

Textural Class	*Maximum Density lb. per cu. ft.*	*Optimum Moisture per cent*
Sand	120	.10
Sandy loam	120	.12
Loam	116	.15
Silt loam	107	.16
Clay loam	110	.16
Sandy clay loam	115	.14
Silty clay loam	103	.18
Clay	102	.20


ACCUMULATIVE YARDAGE OF SOIL-CEMENT ROADS & STREETS IN U.S. BY YEARS
Roads
Streets
Millions of square yards
1935 36 37 38 39 40 41 42 43 44 45 1946

COURTESY PORTLAND CEMENT ASSOCIATION

A FULLY MODERN HI-TENSILE STREET FLUSHER *Costs Your City* NO MORE

The Model **TF** Tractor Flusher shown above is a 1000 gallon capacity. It can be towed by any industrial 14 horse power tractor, or larger.

The TF is equipped with **250 GPM Pump,** and **15 horse power** air-cooled engine (Also available for hook-up to power take-off on tractor.) This flusher eliminates the necessity for an investment in a truck.

The Model 7 Street Flusher is available in 1100, 1500, and 2000-gallon capacities. Equipped with Continental 209 cubic inch displacement engine, and 650 GPM Pump. Three flusher nozzles standard. Fully STREAMLINED design.

Standard Steel Works **Model 7** Street Flusher is constructed of **Hi-tensile** steel throughout thus reducing **corrosion 4 to 6 times, 15%** to **20%** saved on **dead weight,** and **tensile strength** is increased **20% per square inch.**

Fully Streamlined Flusher is furnished at no additional cost, and civic pride is enhanced through the use of modern up-to-date flushing equipment.

Longitudinal sills distributes the tank weight along the entire truck chassis, increasing strength, and **lowering center** of **gravity. Less wear** and **tear** on truck chassis—**better load distribution.**

Low cost maintenance—with centrifugal pump tied directly to power unit, a minimum number of parts to maintain and to keep in repair—unnecessary to have stand by Repair and Maintenance Department.

Large Continental 209 cubic inch displacement engine powers 650 GPM Pump at only 1570 RPM.

Pump provides better than 50-lb. cleaning pressure with 3 Flusher Nozzles open.

OTHER PRODUCTS:
ASPHALT DISTRIBUTORS • TAR KETTLES • MAINTENANCE DISTRIBUTORS • BURNERS STREET FLUSHERS • SPRAY UNITS • SUPPLY TANKS SURFACE HEATERS • SHOULDER ROLLERS . . . and Agricultural Equipment.

Built to the Highest **Standard**

Standard Steel Works NORTH KANSAS CITY, MO., U.S.A.

Airports and Aviation

From Garbage Dump to Seaplane Base

Enclosed within the white line is the area on which Tappan Airways plans its seaplane base adjacent to the village of Tarrytown, N. Y., and within commuting distance of New York City.

NEAR where Washington Irving's legendary Headless Horseman once haunted the Sleepy Hollow region of Tarrytown, N. Y., Tappen Airways, Inc., has completed plans to build a seaplane base. The area chosen for the base is that portion of an unsightly garbage dump, approximately 150,000 square feet, which projects into the Hudson River. Since this area had long been offensive to business and residential interests, the new project has received virtually unanimous backing from the town's populace.

There are three major advantages to this location. No flying over the town will be necessary; it is within easy walking distance of the railroad station, bus, and ferry facilities; the settlement of property rights and the agreement that a percentage over fixed gross will divert directly to the Tarrytown treasury have proved highly satisfactory to Tarrytown.

According to present plans, the base will consist of nine all-steel hangars having an area of 3,600 square feet each. Room for hangaring forty planes with complete servicing and maintenance facilities is included. Fourteen planes will be accommodated simultaneously on the marine installations, which are equipped with automatic ramp and floats. Flight control offices, school and lecture rooms, rest rooms, sun decks, and a club room will be housed within two additional structures.

The community's seaplane base is being sponsored by a group of local veterans headed by George Helwig, former TWA pilot.

Airports Out of the Red

FOR the first time in U. S. aviation history, a significant number of city-owned airports are making money on operations, according to the International City Managers' Association.

Municipal airport revenues exceeded operating costs last year in fifty-two cities over 10,000 population. Mounting revenues reflect post-war air-travel increases, increased landing fees charged aircraft operators, and expansion of such non-aviation airport concessions as restaurants and shops.

As a group, however, city-operated airports are still not self-supporting. Operating costs of 155 city owned and operated airports totalled $7,074,900, while total revenues were $6,069,900, leaving a $1,055,000 deficit. These figures cover virtually all major airports in the United States except those located in New York City.

A comprehensive airport survey conducted for the 1947 Municipal Yearbook revealed that of 927 cities with a population of over 10,000, 247 own and operate one or more airports, and 153 own airports leased to the Federal Government or private operators. At least 489 cities over 10,000 own no airports.

Most of the money-making airports belong to cities in the 100,000 to 500,000 population bracket. Among these with the biggest ratios of revenues to operating costs are Dallas (Love Field, 1946 revenues $105,100, expenses $78,400); Fort Worth (Meacham Field, revenues $273,600, expenses $189,900), and Oakland (Municipal Airport, revenues $175,400, expenses $128,600).

Municipal airports in only two cities of over 500,000 reported revenues exceeding operating expenses—Los Angeles and St. Louis.

Expansion of air facilities has increased airport payrolls considerably. A total of 1,975 full-time employes and 198 part-time employes was reported by 178 airports in cities over 10,000. New York City's La Guardia Field reported 127 full-time employes; Philadelphia's two airports reported 97 each. Los Angeles and St. Louis reported 82 and 56 employes, respectively.

The most popular kinds of airport administration are those with airport managers or boards. Airports are administered by managers in 116 cities, by boards or commissions in 100 cities, by divisions of city department in 16 cities. Two airports are managed by an airport authority. New York's airfields, including Floyd Bennett, Idlewild, and La Guardia, recently were leased to and are managed by the Port of New York Authority.

Among 738 cities between 5,000 and 10,000 in population reporting, 84 own and operate airports, 79 lease their airports to private operators or to the Federal Government, and 575 do not own airports. A total capital investment of $26,719,900 in airports and facilities is reported by 127 airport-owning cities in this population group.

For 1945, 37 of these airports reported a total operating expenditure of $150,600 and a total revenue of $93,800. Only three airports in this group reported 1945 revenues higher than $10,000 each.

OFFICIAL RECORDS PROVE . . .

FEWER BREAKDOWNS

WITH Motorola 2-WAY FM RADIOTELEPHONE EQUIPMENT than with any other!

● Yes, it's a proved fact—the many oversize components, the quality and craftsmanship that go into Motorola communications equipment make it *last longer.* Hundreds of reports show that on Motorola equipment in use six years or more no major repairs have been made and minimum routine maintenance is all that is required.

Even using long life oversize components compact Motorola mobile units require very little space.

Powerful Motorola fixed station transmitters offer peak performance with minimum maintenance.

Motorola console transmitter and receiver . . . compact attractive . . . dependable.

ONLY Motorola 2-WAY FM RADIOTELEPHONE Can prove all these advantages

1. Motorola-patented FM squelch system. The only system that permits full communications range with squelch control.
2. A pioneering receiver design with sensitivity crowding the theoretical limit for noise reduction and with selectivity better than proposed RMA specifications.
3. Automatic volume control for modulation limiting in transmitters.
4. Coordinated microphone, modulator, receiver-audio and speaker to provide the "Golden Voice" of communications systems.
5. Generous size of equipment and components assures longest life, highest efficiency and lowest maintenance cost.
6. Flexibility of design permitting the use of a variety of power supplies.
7. Mobile antennas designed by engineers who know the problems of automobile ignition control. Shielded antenna base of maximum ignition noise control.
8. Heavy duty cables to minimize battery drop. Dust covers that really exclude dirt.

BELL TELEPHONE USES Motorola 2-WAY FM RADIO TELEPHONE TO ROUND OUT ITS NATIONWIDE SERVICE

In many cities where the Bell System is offering mobile telephone service, Motorola transmitting and receiving equipment is being used

WRITE TODAY . . . Motorola engineers will make specific recommendations concerning your application. No obligation, of course. WRITE TODAY

Motorola Inc. COMMUNICATIONS AND ELECTRONICS DIVISION

CHICAGO 51, ILLINOIS • IN CANADA: ROGERS AND MAJESTIC LTD., TORONTO - MONTREAL

Water Supply and Sewerage

Water and Sewage Works Men Conclude National Meeting

(*Continued from Page* 9)

bacteriological analyses are not always the final answer when preparing water for public acceptance.

The business side of water works came under close scrutiny Tuesday at the AWWA portion of the convention. Headlining the general session was a paper by G. E. Arnold, assistant city manager, San Diego, Calif., on the application of business principles to water works operation. These were some of the points that Mr. Arnold emphasized:

1. Good practice calls for billings no oftener than every two months except for large users in most communities. Bills should be presented promptly after readings.
2. Efficient yard or shop is an economic asset. One should give thought to track-level loading platforms and labor-saving machinery.
3. Employe training, making each man familiar with the general overall operation of the utility, is helpful.
4. Appearance also is helpful in building public confidence. This is aided by neat, clean uniforms.
5. A good retirement system promotes improved employe relations.
6. Employe relations will be enhanced by locating the office convenient to the customer. Applicants for service appreciate desks and chairs for taking service applications rather than a window at a counter. Suitable pictures of the water works, a drinking fountain at the plant and office, well-thought-out bill stuffers, all build a closer contact between the water works and the customer.

Further emphasizing the business side of water works was a paper by A. P. Kuranz, manager, Water Utility, Waukesha, Wis., on the value of a public service commission control to municipal water works management. N. T. Veatch, consulting engineer, Black and Veatch, Kansas City, Mo., and newly elected president of AWWA commented on the paper to say that it showed how local utilities prefer operating under state supervision when it is intelligent and well engineered.

Mr. Kuranz' paper was followed by one prepared jointly by H. R. Hall and H. B. Shaw of the Washington Suburban Sanitary District, telling how this district operated, embracing several communities, for the past 28 years.

Ending Tuesday's general session was a paper by M. P. Hatcher, director, Water Department, Kansas City, Mo., telling what water works rules and regulations should contain.

Disposal of Wastes

Tuesday morning's water purification division meeting included a paper discussing the disposal of wastes from water purification and softening plants by W. W. Aultman, water purification engineer, Metropolitan Water District of Southern California, LaVerne. A. A. Kalinske, chief hydraulic engineer, Infilco, Inc., Chicago, carried the subject further by delivering a discussion on the separation of water from solid and liquid mixtures; R. L. Derby, senior sanitary engineer, Department of Water and Power, Los Angeles, told how to control slime growth in transmission lines; and to end the morning AWWA meeting, N. J. Howard, director of Water Purification, Toronto, delivered a discussion with C. J. Lauter, senior chemical engineer, U. S. Engineer Office, Washington, D. C., on superchlorinating and dechlorinating experiences.

Sewage Works Sessions

Tuesday morning saw the first technical papers in the Federation of Sewage Works Associations' portion of the meeting. Clyde C. Kennedy, consulting engineer, San Francisco, told of the developments in sewage treatment at San Francisco, with his discussion enlarged upon by Ralph G. Wadsworth, city engineer, San Francisco. Following this was a joint paper by J. C. Stevens and H. Loren Thompson, Stevens and Koon, consulting engineers, Portland, Ore., on the Portland sewerage project. A. M. Rawn, chief engineer and general manager, Los Angeles County Sanitary Districts, discussed the paper.

Tuesday afternoon the Federation of Sewage Works Association and AWWA met in joint session to discuss ground water pollution problems. Dr. A. P. Black, Professor of Chemistry, University of Florida, Gainsville, Fla., outlined basic concepts in ground water law; Malcolm Pirnie and R. W. Sawyer, New York Consulting engineers, then jointly told of the production that might be expected from ground water, and of legislation leading to its study. B. E. Doll, deputy city engineer, Huntington Park, Calif., told of the formulation of legislation to protect ground water from pollution; and R. F. Goudey, principal sanitary engineer, Department of Water and Power, Los Angeles, delivered a paper on the development of standards for the protection of ground water from pollution.

Engineering Personnel and Labor Relations

Wednesday morning's AWWA meeting started with a discussion of the American Public Health Association program for engineering personnel, by W. T. Ingram and F. B. Elder, both of APHA. John H. Murdoch, Jr., American Water Works and Electric Co., New York, discussed the upgrading of the water works industry in light of present increased costs and working conditions. This was followed by a discussion of the touchy subject of labor organizations and anti-strike legislation directed toward public employes. S. S. Green, materials engineer, Department of Water and Power, Los Angeles, covered engineering labor organizations, and W. R. LaDue, chief engineer, Bureau of Water and Sewerage, Akron, Ohio, and president of AWWA, analyzed anti-strike legislation. Wednesday morning's FSWA meeting covered the natural purification characteristics of a shallow turbulent stream by F. W. Kittrell, acting chief, Stream Sanitation Staff, Health and Safety Department, Tennessee Valley Authority, with the paper discussed by Dr. George E. Symons, associate editor, *Water and Sewage Works*. This was followed by an analysis of the effect of sewage and waste disposal on industrial operating costs by W. J. O'Connell, Jr., W. J. O'Connell and Associates, San Francisco, with a discussion by Herbert C. Davis, president, Terminal Island Sea Foods, Ltd., Terminal Island, Calif. Mr. O'Connell pointed out that industry has a real and recognizable stake in seeing that streams remain relatively free from pollution in order to insure good water for industrial operations. Cannery wastes were discussed by L. F. Warrick, state sanitary engineer for Wisconsin.

Reclamation of Sewage Effluents

Wednesday afternoon saw a joint meeting of AWWA and FSWA discussing the important subject of reclamation of sewage effluents. N. T. Veatch, consulting engineer, Black and Veatch, Kansas City, led off with an analysis of the industrial uses of reclaimed sewage effluents. He mentioned the use made by these localities:

1. *Harrington, Kans.*, in which a railroad uses sewage effluent rather than draw on the highly mineralized ground water.
2. *Grand Canyon, Ariz.*, in which this national park uses sewage effluent from an activated sludge plant for all purposes except drinking. Outside of its questionable past, said Mr. Veatch, it is good drinking water.
3. *Corpus Christi, Tex.*, in which trickling filter effluent is used for condenser cooling in an oil refinery.
4. *Baltimore, Md.*, where the greatest quantity of sewage effluent is used for quenching in a steel mill. Dr. Abel Wolman, professor of sanitary engineering, Johns Hopkins University, gave a detailed discussion of this particular project.
5. *Big Springs, Tex.*, where the use of the effluent by an oil refinery brings sufficient revenue to meet 90% of the operating cost of the treatment plant.
6. *Enid, Okla.*, where an oil refinery uses effluent from an intermittent trickling filter for cooling and boiler makeup water.
7. *Duncan, Okla.*, where the effluent is used in an oil refinery.
8. *Goldfield, Nev.*, where settled sewage effluent is used in metallurgical processes.
9. *Providence, R. I.*, where the effluent is used for cooling in an incinerator.
10. *Grand Island, Neb.*, where the effluent is used to make ice for a skating rink.

L. V. Wilcox, agronomist, Rubidoux Laboratory, U. S. Department of Agriculture, Riverside, Calif., analyzed the agricultural uses of reclaimed sewage effluents, with a discussion followed by Dario Travaini, superintendent of disposal, Phoenix, Ariz. Winding up the afternoon meeting was a paper by S. T. Powell, consulting chemical engineer, Baltimore, Md., on the limits of pollution of water for industrial use; the discussion was led by A. M. Bus-

(*Continued on Page* 109)

DELAYED ALARMS

CAUSE FIRE DISASTERS

WHEN FIRE OCCURS——PULL A FIRE ALARM BOX

IMMEDIATELY!

"It is generally recognized that there is no other thoroughly satisfactory means of sending and receiving fire alarms than an approved fire alarm telegraph system. Telephones should not be relied upon to replace needed boxes nor to supplement any inadequacy in number or location of boxes."

—National Fire Protection Association

DETAILED INFORMATION ON REQUEST

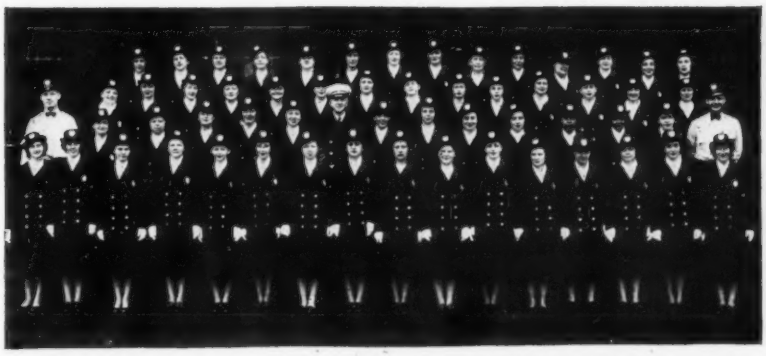
THE GAMEWELL COMPANY

NEWTON UPPER FALLS, 64, MASSACHUSETTS

IN CANADA: NORTHERN ELECTRIC COMPANY, LTD., MONTREAL

Pittsburgh Women Traffic Officers Safeguard School Children

By DOROTHY E. WILLS
Safety Education Supervisor
Pittsburgh, Pa.



Training school is over for these Auxiliary Traffic Officers of Pittsburgh, Pa. Now, as shown below, they will be regulating traffic at school intersections.

LATE in May, Pittsburgh started something new in the public safety field when auxiliary policewomen began to appear on its city streets. At first these lady traffic officers were the objects of whistles and flirtatious remarks of passing male drivers, but it was soon learned that these women were officers intent on carrying out their duties.

The Auxiliary Policewomen were established to relieve regular full-time policemen at school crossings. The working format for this project was set up by Pittsburgh's Better Traffic Committee, made up of a group of civic-minded businessmen. Applicants must pass a rigid physical examination, must have completed two years of high school or the equivalent, must be of good character, and must have a friendly personality with children.

Training School

After being accepted, the candidates are assigned to a training school, where they are taught all the rules and regulations of the police department, report writing, court procedure, traffic law, first aid, operation of school safety patrols, and child psychology. They are then given five days of field training to learn how to control traffic at a corner. The last step is when they are assigned uniforms and placed at a school crossing near their homes.

These auxiliary traffic officers report for duty at three specified periods during each school day, not to exceed an average of 75 hours per month during the ten-month term. The salary is $50 per month. In addition to traffic control, the auxiliary officers must perform the necessary police duties of swearing out information and presenting testimony for the prosecution of any driver they observe violating traffic regulations in the vicinity of the school to which they are assigned. They are required to report on standard accident reporting forms all traffic accidents which occur at their assigned station.

The supervision of all auxiliary officers is the direct responsibility of the Inspector of the Traffic Division of the Bureau of Police. He is assisted by two motorcycle policemen who regularly observe the auxiliary officers while on duty. Contacts are made between the superintendents of the public and parochial schools and the traffic inspector to determine whether the school principals are satisfied with the manner in which the auxiliary policewomen are carrying out their duties. There are sixty-two of these women all of whom are vitally interested in their work, since many of them are mothers whose children attend school at the crossing where they are stationed.

Policemen are available for sterner duties since these officers went on duty.

What becomes of them?

Last night another trainload of "Caterpillar" products rolled out of the yards. With the factory's peacetime production at an all-time high, such scenes are of daily occurrence.

So, you ask, why the "scarcity"? . . . What becomes of all these thousands of Diesel-powered tractors, engines, motor graders and units of earthmoving equipment?

That's a fair question. Especially if you are a customer who has been patiently awaiting delivery on an order. Here is the answer:

"Caterpillar" products have gained unprecedented demand that takes time to supply. It is a demand that has been built up through sheer excellence of quality . . . through tireless engineering research and job study that have made them better and better . . . through their illustrious war record and their versatility for serving many industries.

In fact, "Caterpillar" power has become woven into the very fabric of our economy and progress. Big-scale utility, reclamation and conservation projects could scarcely proceed without it. Agriculture needs it. Logging demands it. It is a "must" on highway construction and maintenance. Mining, excavating, quarrying, oil drilling, community lighting, fishing, hatcheries, milling, cotton-ginning, machine shops, switching locomotives, factories—all find "Caterpillar" power a key to a successful public service.

So, you see, the "world of 'Caterpillar' Diesels" is a big one. The needs that "Caterpillar" must supply are many. The ultimate destinations of every trainload of "Caterpillar" products are widely scattered.

To allocate the factory's output is no small problem. Apportionment is fair—by regions and by industries. Priority of orders is the reasonable basis for customer deliveries. "Caterpillar" subscribes firmly to that principle. So do "Caterpillar" dealers, whose responsibility it is to carry it out. Each is a businessman of ability and integrity, who merits the confidence of his customers and his company.

Caterpillar Tractor Co., San Leandro, Calif.; Peoria, Ill.

Stop—Check and Mail

Please check over the list of interesting free catalogs on this and following pages. To obtain the literature you want, write direct to the manufacturers, or circle the identifying numbers on this coupon and mail it to The American City Magazine, 470 Fourth Ave., New York 16. We will see that catalogs are sent to you without expense or obligation.

886 887 888 889 890 891 892 893 894 895 896 897
898 899 900 901 902 903 904 905 906 907 908
909 910 911 912 913 914 915 916 917 918 919 920
921 922 923 924 925 926 927 928 929 930 931
932 933 934 935 936 937 938 939 940 941 942 943
944 945 946 947 948 949 950 951

Name .....Position .....

Address .....

Filters for Sewage Sludge Dewatering

886 Vacuum filters take up little room, eliminate insect hazards, operate in fair or foul weather, and—most important—dewater sludge from any type of sewage treatment and require little supervision. For information about continuous vacuum filters, write to The Eimco Corp., Salt Lake City 8, Utah.

Emergency and Permanent Pipe Clamps

887 Emergency pipe clamps should be easy to apply as well as dependable. The M. B. Skinner Co., South Bend 21, Ind., will send you details of its pipe clamps, which eliminate the necessity of replacing leaking pipe and may effect an appreciable saving.

Liquid Chlorine For Water Purification

888 Solvay liquid chlorine gives a uniform and controlled purity to water. Available in cylinders, tank cars, or ton containers, liquid chlorine is safe and easy to use. For data, write the Solvay Sales Corp., 40 Rector St., New York 6, N. Y.

Altitude Valves With Normal and Emergency Controls

889 Ross automatic altitude valves come with two sets of controls. The automatic hydraulic control operates the valve under normal conditions, and the electric remote control works during emergencies. For details, write the Ross Valve Mfg. Co., Inc., P. O. Box 596, Troy, N. Y.

Drinking Fountains That Withstand Hard Wear

890 Murdock's drinking fountains, pedal operated, are of brass internal construction, with a phosphor spring operating the valve. Maintenance costs are low. For information, write The Murdock Mfg. & Supply Co., Cincinnati 2, Ohio.

Big Savings in Snow Plows

891 American Motors, Inc., 250 Park Ave., New York 17, N. Y., is closing out approximately $80,000 worth of unassembled snow plows for $27,450. These Hammett plows are designed for installation on Ford and Chevrolet trucks but are readily adaptable to other-make trucks. They feature one-man operation and positive hydraulic power for raising and lowering wings. Write for full information.

Miniature Steam Train for Amusement Parks

892 The Ottaway Amusement Co., 3045 North St. Francis Ave., Wichita, Kans., will send you illustrated literature on its miniature steam train—an amusement ride that is large enough to accommodate adults and small enough to be highly profitable. The complete train consists of engine, tender, three coaches, track, miniature coal shovel, poker, and oil can.

Water Measuring Equipment

893 Bulletin 309, distributed by R. W. Sparling, Box 3277 Terminal Annex, Los Angeles 54, Calif., describes this company's main line meters, sizes two inches and larger and lists recommended usages.

Gasoline Paving Breakers Break, Dig, and Tamp

894 The advantage of a gasoline hammer paving breaker is the elimination of air compressor, battery box, and cable. Completely self-contained, the unit may be used for breaking concrete, digging, and tamping. An illustrated folder will be sent to you upon request by the Syntron Co., 430 Lexington, Homer City, Pa.

Power Sewer-Cleaning Units

895 The Turbine Sewer Machine Co., 5210 W. State St., Milwaukee, Wis., will send you *Complete Sewer-Cleaning Equipment*, a catalog which gives the specifications of its seven models of power sewer-cleaning units.

Pneumatic Pipe-Driver Drives 25 Feet Per Hour

896 The Atlantic pneumatic pipe-driver drives pipe up to two inches under highways, abutments, or lawns at a speed of twenty-five feet an hour, taking power from any standard pavement breaker. Trenching, backfilling, or surfacing are not necessary. Write the Atlantic Steel Corp., 1775 Broadway, New York 19, N. Y., for folder GPD.

Dress Up Your Uniformed Personnel

897 Reeves Brothers, Inc., 54 Worth St., New York 13, N. Y., will send you data about the numerous types of uniforms and materials available for the various uniformed departments of your municipality. The line includes Army twill, Glengarrie poplin, Reeveking gabardine, Byrd cloth, marine herringbone, mountain cloth, warrior twill, and Pima King broadcloth.

Soft, Clear, Iron-Free Water

898 The Permutit Company, Dept. A7, 330 West 42nd St., New York 18, N. Y., will send you information on how to make the water used by your municipality soft, clear, and iron-free—usable in both homes and industry.

Centrifugal Pumps in Sewage Processing

899 Centrifugal pumps serve a multitude of purposes in the sewage treatment plant—pumping sewage from subsidiary stations into the main sewer line, lifting from subsurface drainage areas into the main line, and handling of surface drainage, to name just a few. For details and examples of how best to utilize centrifugal pumps, write the Morris Machine Works, Baldwinsville, N. Y.

Modern Refuse Incinerators

900 The Nichols Monohearth mechanically stoked refuse incinerator reduces supervision to a minimum, saves money, and increases efficiency. For specifications about the Monohearth, or information on how you can modernize your existing incinerator with Monohearth cone and stoking arms, write the Nichols Engineering & Research Corp., 60 Wall Tower, New York 5, N. Y.

Oscillating Piston Assures Accurate Metering

901 Empire meters, constructed on the balanced oscillating piston principle, incorporate several features which make this meter accurate over long periods and easy to maintain and repair. Construction is designed to assemble without screws and is composed of a minimum of parts; the working part assemble as a complete unit. Bulletin W-802 describes the frost-protected model, and Bulletin W-801 gives information on the meter designed for warm climates. Write to the Pittsburgh Equitable Meter Div., Rockwell Mfg. Co., Pittsburgh 8, Pa.

Extra-Wide Cab and Body on Fire Truck

902 Built on a lightweight chassis with powerful engines offering up to 240 b.h.p., the Oren fire truck has triple and quadruple apparatus and delivers 750 to 1,500 gpm. Units are available with seven-man closed and canopy cab, three-man closed, open, semi-open, and sedan types Standard models and special units to meet your municipality's requirements are available. For information, write the Oren Roanoke Corp., Roanoke 16, Va.

(Continued on Page 23)

SURE cure for a drill's "ills" — drill doctors say — is *effective lubrication.* Use Texaco Rock Drill Lubricants (E.P.), and your drills will stay in peak condition longer, require less servicing, cut greater footage at lower cost.

Texaco Rock Drill Lubricants (E.P.) have "extreme pressure" characteristics — give all moving parts full protection against wear. They resist oxidation, always flow readily, prevent rust and corrosion whether drills are running or idle.

Leading rock drill manufacturers approve Texaco Rock Drill Lubricants (E.P.) because they meet the lubrication requirements of every type of drill design and operating condition.

For Texaco Products and Lubrication Engineering Service, call the nearest of the more than 2500 Texaco distributing plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, New York.

PROTECT COMPRESSORS, TOO! Get more efficient, economical compressor operation by lubricating with the recommended *Texaco Alcaid, Algol or Ursa Oil.* All these famous oils prevent hard carbon formations — keep rings free, valves active, ports and air lines clear. Use them to keep pressure up, costs down.

TEXACO

TEXACO Rock Drill Lubricants (E.P.)

Tune in . . . TEXACO STAR THEATRE presents the TONY MARTIN SHOW every Sunday night. See newspaper for time and station.

Stop—Check and Mail

Use Coupon on Page 21

Garbage Trucks for Both Types of Refuse

903 The Leach Compactor is designed specifically for compactible refuse material. The Refuse-Getter is designed for non-compactible refuse. For detailed information about these two refuse collection units, write the Leach Co., Oshkosh, Wis.

Jet Pumping System for Deep or Shallow Wells

904 Able to produce capacities of from 120 gallons to 7,500 gallons per hour from well depths to 120 feet, Peerless Jet pumps are available in double- or single-pipe systems in sizes from ¼ hp to 3 hp. For bulletins, write the Peerless Pump Div., Food Machinery Corp., 301 West Ave. 26, Los Angeles 31, Calif.

Pipe and Leak Locators

905 For data on pipe and cable finders as well as on water- and oil-leak locators, write to Joseph G. Pollard Co., Inc., 141 Ashland Pl., Brooklyn 1, N. Y. Pollard is the eastern distributor for the Fisher M-Scope pipe and cable finder.

Road-Building Equipment

906 Littleford Bros., Inc., 500 E. Pearl St., Cincinnati 2, Ohio, will send upon request Catalog W, which contains descriptions of this company's line of road-building machines — spray-masters and kettles, heaters and rollers.

"Weather-Proof" Meters

907 Hersey water meters are manufactured to withstand wide variations in weather and to give accurate measurements in hot humid climates or freezing weather. For illustrated printed matter, write to the Hersey Mfg. Co., South Boston, Mass.

Answers to Municipal Questions

908 The International City Managers' Association, 1313 East 60th St., Chicago 37, Ill., is equipped to answer the questions that city officials may have on management problems, efficiency of administration, and what other cities are doing. The subscription fee entitles you to prompt replies to specific queries, copies of replies to inquiries from other cities, and a subscription to *Public Management* and the *Municipal Year Book*.

Pneumatic-Wheeled Tractors Do Heavy Lifting

909 The International I-4 Tractors are highly maneuverable, capable of lifting heavy weights, and versatile in their adaptability. Visibility from the cab is good, and controls are easy to handle. For information, write to the Industrial Power Div., International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.

Equipment for Water and Sewage Plants

910 The Iowa Valve Co., Hubbell Bldg., Des Moines, Iowa, will send you information about its line of equipment for water works, filtration, and sewage disposal plants. Also available is literature on the company's "Corey Type" hydrants.

Couplings and Repair Products

911 The Dresser Mfg. Div., Bradford, Pa., has prepared a catalog describing its line of couplings and repair products, with specific details on the most efficient mechanism to use under varying conditions. Write for Catalog No. 47.

How to Select and Maintain Turf Grass

912 The care of lawns is greatly simplified if the correct type of grass is selected for the particular soil and location. *Turf and Lawn Problems*, published by Associated Seed Growers, Inc., New Haven 2, Conn., contains information on the choice and upkeep of lawn areas which municipal officials may find valuable.

Small Roller Does Close Work

913 The Pierce Baby Bear is a 2½- to 3-ton roller designed for use in maintaining small areas and for doing close work. The roller works against a curb up to 25 inches high, and 1½ inches or less when working against a higher wall or building. Literature may be obtained by writing to the Lewis Mfg. Co., 415 Hoefgen Ave., San Antonio 6, Texas.

Precalked Cast-Iron Pipe Saves Laying Time

914 McWane cast-iron pipe arrives from the factory with lead and redwood wedges already in the bells. Then all that has to be done is to socket the spigot and calk. The pipe may be obtained in sizes of 2 inches through 12 inches. For additional information, write the McWane Cast Iron Pipe Co., Birmingham 2, Ala.

Protect Public Property With Link Chain Fence

915 The Stewart Iron Works Co., Inc., 1421 Stewart Block, Cincinnati 1, Ohio, will send you detailed information on its non-climable chain-link wire fence that will assure protection of public property. Also manufactured are wire window guards, wire-mesh partitions, and steel folding gates.

Avert Accidents With Adequate Street Lighting

916 One of the most immediately effective methods of reducing accidents is to equip your municipality's streets with adequate lighting—what the motorist can see, he won't hit. For "case histories," write for the booklet entitled *Evidence*, The Street & Traffic Safety Lighting Bureau, 155 E. 44th St., New York, N. Y.

Accounting Machine Combines Four Taxing Operations

917 The automatic Sundstrand combines four accounting processes: the assessor proves that all properties are present and accounted for; the biller multiplies the valuation by the tax rate and computes the installments; the collector extends the yearly balances and total balances; the treasurer automatically posts all transactions. For particulars, write the Underwood Corp., One Park Ave., New York 16, N. Y.

Diesel Engines

918 Bulletin 4705, distributed by the Superior Engines Division of The National Supply Co., Springfield, Ohio, describes the construction and design of the Superior diesels which are built with large crankshafts and high-tensile-strength alloy castings.

Water Leak Locator

919 The A/H leak locator eliminates guesswork in locating leaks, and eliminates unnecessary excavation and street repair. The locator is placed in contact with the earth or paving surface, and through the earphone the operator knows exactly where the leak is. Write for circular AC-5, Allen-Howe Electronics Corp., 150 Main St., Peabody, Mass.

Duronze Resists Corrosion

920 Duronze, an alloy of bronze with silicon and other metals, has been particularly valuable in the water works field. Duronze bolts and nuts have a tensile strength of over 90,000 psi, are non-rusting, and can be reused repeatedly. The Bridgeport Brass Co., Bridgeport 2, Conn., manufacturers of Duronze strip, rod, wire, and tubing, will send you complete information about its product.

Reduce Maintenance on Meters

921 Whether for large or small flows, accuracy and low maintenance costs are the primary requirements of a meter. The high degree of interchangeability of parts on the Buffalo meters reduces the maintenance problem to a minimum. For details, write the Buffalo Meter Co., 2902 Main St., Buffalo 14, N. Y.

Rubber Protective Clothing

922 The Midwestern Mfg. Co., 109 Main St., Mackinaw, Ill., will send you information about its line of protective clothing. Manufacturers of the well-known Mackinaw coats, the company produces garments which are reinforced at all points of stress, have riveted double-stitched seams, and have a heavy cloth lining.

Build Your Own Sewers, Conduits, Bridges

923 Armco Drainage & Metal Products, Inc., are manufacturers of Multi Plate arches, pipe, and pipe-arches which can be assembled by unskilled labor in the field to form sewers, special drainage structures, stream enclosures, and small bridges. Data are available from the company, 2455 Curtis St., Middletown, Ohio.

Smooth Surfaces with Variable-Weight Rollers

924 Austin-Western tandem rollers incorporate the features of variable weight, high degree of visibility, hydraulic steer, and single or dual controls. Also available are three-wheeled rollers. For catalogs, write the Austin-Western Co., Aurora, Ill.

Water Tank Controls

925 Bulletin F-6, issued by the Automatic Control Co., 1015 University Ave., St. Paul 4, Minn., describes the company's Floatrol, which controls from one to three sequence operations for open tanks and sumps using just one float. The Floatrol is available with depth indicator and manual transfer plugs or automatic alternator.

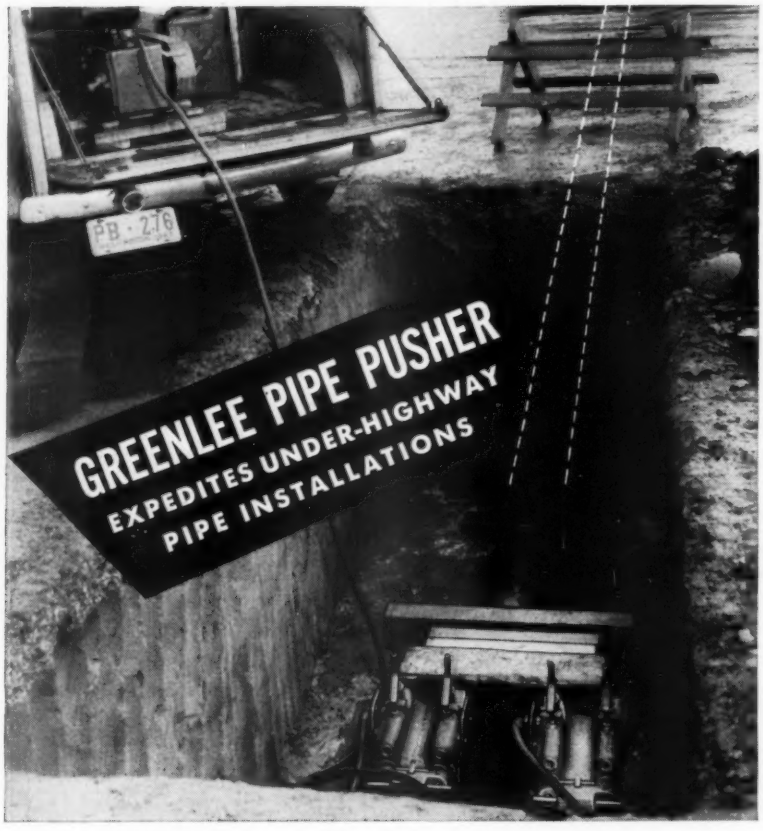
Multiple-Hearth Furnace Dries Sewage Rapidly

926 The continuous stirring of the multiple-hearth furnace produces rapid drying and continuous burning without the formation of clinker ash in sewage processing. For details of Morse-Boulger's patented operational divisions in its line of multiple hearth furnaces, write the Morse Boulger Destructor Co., Room 1700 F, 205 East 42nd St., New York 17, N. Y.

Straight Cast Iron Pipe Can Be Laid in Curves

927 The high degree of flexibility of Universal cast-iron pipe permits use of straight lengths of the pipe for laying in curves without the use of special fittings. Other advantages are that the pipe withstands expansion, contraction, unequal settlement, vibration and shock, and electrolysis. Caulking, bell holes, and wide trenches are not required. Write The Central Foundry Co., 386 Fourth Ave., New York 16, N. Y., for catalog.

(*Continued on Page* 24)



In Washington the state law says you can not tunnel under a highway. But that didn't stop Marckmann & Williams of Seattle from installing 42 feet of 10-inch pipe under the state highway near Sumner, Washington.

They used two GREENLEE Hydraulic Pipe Pushers and a Power Pump . . . they *pushed* the pipe under the road.

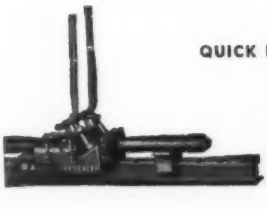
You, too, can simplify and speed underground installations of pipe with a GREENLEE Pusher—manually or power-operated according to your jobs.

Push pipe under streets, sidewalks, floors, lawns, railroads, and other obstructions. Eliminate extensive ditching and tearing up . . . save time and heavy costs of tedious back-filling, tamping, re-paving (just a short trench accommodates the pusher).

Save with a GREENLEE, which often pays for itself on the first few jobs. Get facts now by writing Greenlee Tool Co., Division of Greenlee Bros. & Co., 2028 Columbia Avenue, Rockford, Illinois.

TOOLS FOR CRAFTSMEN

GREENLEE



QUICK FACTS ABOUT THE GREENLEE HYDRAULIC PIPE PUSHER

Easy — one or two men can easily operate on any job. *Portable* — compact, easy to carry to job and set up. *Fast* — operates at six different speeds. *Two models* — (1) for pipe up to 4-inch; (2) for larger pipe, drainage ducts, concrete sewer pipe. Do the job easier, quicker with a GREENLEE.

Check and Mail

Use Coupon on Page 21

Surveys Save Water Cost

928 The Pitometer Co., 52 Church St., New York 7, N. Y., will analyze the flow of water in your municipality's distribution system, and the result should be an appreciable saving in operation.

Trolley Coaches Have Long Life-span

929 Trolley coaches—bus-type vehicles run by overhead electricity—have been found highly economical for several reasons: few wearing parts which reduce servicing, inspection, and repairs; low power costs; high passenger-per-hour capacity. For information on the number and type of coach most economical for your city, write for Bulletin 939A, General Electric Co., Schenectady 5, N. Y.

How to Choose and Use Steel Fences

930 A variety of types of steel fence, manufactured to suit each specific requirement, is manufactured by the Cyclone Fence Division of the American Steel and Wire Co. An informative 32-page book on how to choose and use a wire fence will be sent on request by Cyclone Fence, Dept. B-67, Waukegan, Ill.

High Rate of Aeration in Sewage Treatment Plants

931 By combining mixed liquid with air, under jet pressure, an exclusive aerating process produces an exceedingly high rate of oxygen absorption in the activated sludge process. Write for details of operation to the American Well Works, 100 North Broadway, Aurora, Ill.

The Walking Rotary Plow

932 As easy to handle as a wheelbarrow and faster than a score of men, is the small rotary plow manufactured by the Roto Plow Co., Shakopee, Minn. The plow has a positively controlled discharge that will direct the snow from 6 to 100 feet and will load accurately and quickly into a waiting truck. Literature distributed by the company gives specifications of the plow and shows it in operating situations.

Mist Spraying Kills Insects

933 A powerful, yet comparatively inexpensive method of eliminating insects, weeds, and fungi is through the use of the mist sprayer—the use of a fine spray or fog of insecticide instead of a solid stream. The Lawrence Aero-Mist Sprayer Co., Greenfield, Mass., will send you illustrated literature describing the many advantages of this type of pest extermination.

Check Trade Wastes Profitably

934 Trade wastes need not be a headache, particularly if they are treated before they enter the sewer. Bulletin #5W, published by the Brosites Machine Co., Inc., 54 Church St., New York 7, N. Y., provides important information to city officials faced with this problem. It describes the Webcell Continuous Dialyser, which has rolled up an impressive record in reclaiming trade wastes profitably.

Light-Duty Snow Plow Attaches to Bumper

935 The Maxim Single Blade Snow Plow, an auxiliary unit, may be attached to the bumpers of either automobiles or trucks and was designed for clearing drives, parking areas, and walks. Capable of clearing obstacles up to 4 inches high, the plow is particularly valuable for clearing areas that are not easily maneuverable. For additional data, write the Maxim Silencer Co., 85 Homestead Ave., Hartford 1, Conn.

(*Continued on Page 26*)

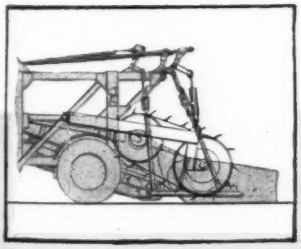
SOLVED

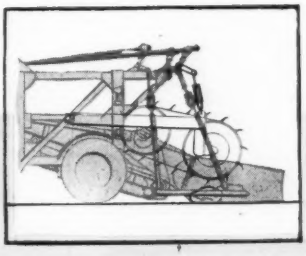
THE AGE-OLD PROBLEM OF SNOW REMOVAL FROM CITY STREETS

Snow piles in the street and along the curb are hazardous, and costly to business and traffic. You can remove them quickly, easily and at minimum cost with the new Athey Force-Feed Loader. This loader is a self-propelled, hydraulically-operated, one-man loader. It is capable of loading deep, broad windrows up to 10 cu. yd. per minute. Pick-up is clean — because of down-pressure on the moldboards and cutting edge. Snow is loaded into trucks quickly without packing, which eliminates dumping delays.

A one-lane loader, the Athey Force-Feed Loader scoops and loads snow while normal traffic continues.

It is the low-cost answer to removing snow from city streets. It is fully proved — see your nearest Athey-"Caterpillar" Dealer for details. *Athey products are distributed by the world-wide "Caterpillar" sales organization.*





The exclusive "full-floating" feeder is the secret to better and faster snow loading. Such things as chains, frozen ashes, sticks, cans and other foreign material are readily loaded by the Force-Feed Loader without interruptions.

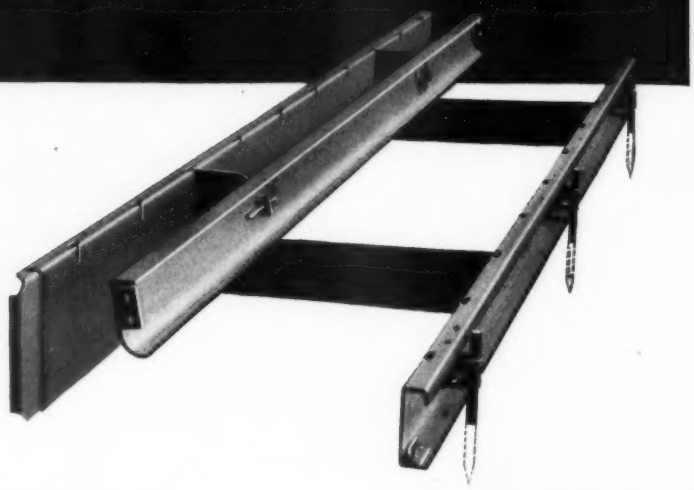
Athey Products Corporation, 5631 West 65th Street, Chicago 38, Ill.

Athey

FORCE-FEED LOADERS

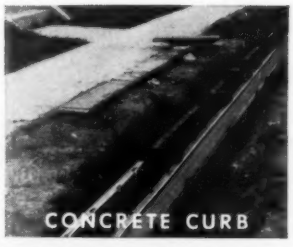
Athey APCOR Products

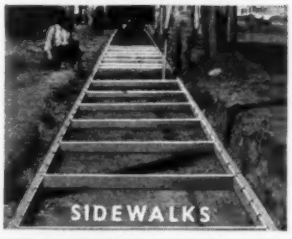
BLAW-KNOX STEEL FORMS for HIGH DOLLAR RETURN VALUE

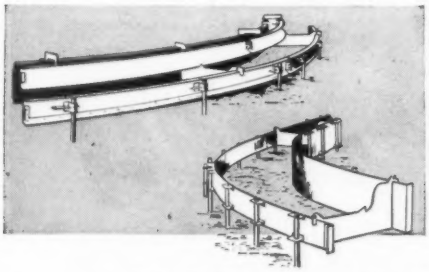


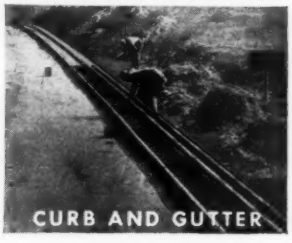
Here's why—

These steel forms are a *permanent investment*—always ready for action—to use again and again. They are easy to transport, set up and remove . . . Whether the job is city street, curb-and-gutter or sidewalk, it can be done quicker and cheaper, with standard Blaw-Knox forms. They eliminate expensive specially built wood forms as well as the hand-finishing necessary after wood forms are removed . . . If you are interested in doing a better paving job at less cost, write today for Catalog No. 1859.









BLAW-KNOX DIVISION

OF BLAW-KNOX COMPANY

2102 Farmers Bank Bldg., Pittsburgh 22, Pa. • Offices in Principal Cities

Check and Mail

Use Coupon on Page 21

Added Traction for Snow Loader

936 Locking differentials on the B-G Model 548 Crawler-Mounted snow loader provides full-geared power to all wheels for maximum traction and push. Pneumatically tired, the machine has a high speed, cuts a swath of almost 8 feet, and can be used for grading ice as well as for snow loading. The over-cab discharge enables the truck to travel in the same direction as the loader. Write to Barber-Greene, Aurora, Ill., for illustrated Bulletin No. 548.

Does Your Water Tank Need Painting?

937 Many municipalities have already discovered that a water tank need not be unattractive—painting not only enhances its appearance, but performs the necessary functional service of increasing resistance to corrosion which results from inclement weather. If your water tank needs attention, write the Universal Construction Co., 1158 W. 34th St., Indianapolis 8, Ind.

Avoid Winter Trouble with "Fire-Guns"

938 Hauck thawers and heaters provide quick heat with a 2,000° F. flame for melting ice and snow, thawing ground preparatory to construction, and providing temporary heat for concrete mixers and central-heating plants. Ask for Bulletin No. 1042, Hauck Mfg. Co., 124-136 Tenth St., Brooklyn 15, N. Y.

Street Materials

939 Printed matter is available on crack and joint fillers, concrete-curing compounds and wood preservatives, bridge and traffic paints, and road tars. The free pocket-size Bituva manual contains useful street construction data. Address Reilly Tar & Chemical Corp., Indianapolis 4, Ind.

From Garbage Dump to Sanitary Fill

940 *Answer to Your Waste Disposal Problems . . . With the Drott Bullclam Shovel* gives an account of how an open dump can be transformed economically into a modern sanitary fill. The booklet is available from the Drott Mfg. Corp., 4344 N. Green Bay Ave., Milwaukee 12, Wis.

Better Parking—More Revenue

941 The modern method of improving parking conditions while increasing municipal revenue is the parking meter. And citizens will like them if they know the meters are accurate. Bulletin DU-501, issued by The Dual Parking Meter Co., a subsidiary of The Union Metal Mfg. Co., Milford Bldg., Canton 2, Ohio, describes the many advantages of metered parking.

Fire-Hose Dryer with Air Conditioning

942 The Circul-Air fire-hose dryer not only dries hose, but air-conditions it also, shortening drying time and retarding rot and mildew. For data, write The Circul-Air Corp., 575 E. Milwaukee St., Detroit 2, Mich.

Small-Scale Biofiltration

943 The combination of the new Dorr Duo-Clarifier and the new Dorrco Duo-Filter makes small-scale biofiltration treatment in two stages possible with only two units, and is applicable for the treatment of domestic sewage and industrial wastes. For details about how the Duo-Clarifier provides primary and secondary sedimentation in the structure and how the Duo-Filter provides two-stage filtration, write for Leaflet No. 7312, The Dorr Co., 570 Lexington Ave., New York 22, N. Y.

(*Continued on Page* 28)

PERFECTION

for your city

Second only to pride in one's home is pride in one's city. The "perfect city" will perhaps never be achieved, but every responsible official is constantly attempting to make his city most nearly perfect. Better parks, schools, public buildings, transportation and traffic control are all objectives toward perfection. Well regulated parking is vital to efficient prosperous business districts. Today cities most nearly achieving perfection in parking regulations have already installed Mark-Time Perfection Parking Meters. A Mark-Time installation engineer will gladly make a metered parking survey for your city in cooperation with your own traffic control officials, and submit complete recommendations without any obligation to you.

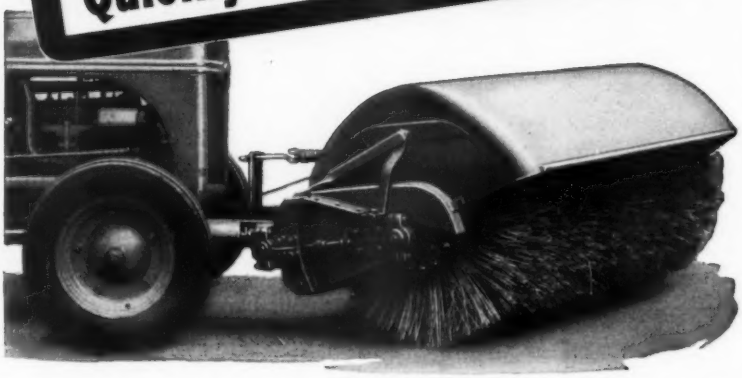
MARK TIME *Perfection*

the most perfect parking meter for your city

M. H. RHODES, INC., HARTFORD 6, CONNECTICUT

Remove RUBBISH and SNOW from Your Streets, Alleys and Walks

Quickly-Easily-at Low Cost



LITTLE GIANT POWER SWEEPER

If you find hand sweeping and snow shoveling too costly and slow, but your budget does not permit extensive expenditures for mechanical equipment, then the Little Giant Sweeper will meet your requirements.

For All Tractors, Jeeps

Little Giant Sweeper mounts on all tractors and Jeeps, normally requiring less than 90 minutes to attach. Operates from power take-off. Brush sets at 30 degree angle. Sweeps to right side of tractor, outside of wheel path. Sweeps against forward motion of tractor for increased efficiency. Dependable chain drive—all moving parts are shielded for operator's protection.

Long-Wearing Brush—Dust Hood

Brush lengths of 5, 6, 7, 8 and 9 feet can be furnished. The 5-foot length is recommended for sidewalk snow sweeping. Long-wearing Palmyra fibre brush, refillable at nominal cost. Adjustable ground pressure—brush can be quickly set to fit all sweeping conditions. Dust hood helps keep tractor clean—assures clear vision for operator. Hood can be removed in 15 minutes for sweeping snow.

Little Giant gets the sweeping job done faster. It quickly pays for itself in labor saved. The initial investment is low—very little upkeep expense. Can be used year-round—for snow in the winter and rubbish the rest of the year.

Designed by experts with years of experience in the sweeping field. Widely used by municipalities, airports, road contractors and industrial concerns.

We are in production and can make prompt delivery. Let us send you complete information and prices. Write

LITTLE GIANT PRODUCTS, INC.

1585 N. ADAMS ST., PEORIA 3, ILLINOIS

Check and Mail

Use Coupon on Page 21

How to Use Bitumuls

944 The American Bitumuls Co., 200 Bush St., San Francisco, Calif., will send you its *Bitumuls Handbook* which contains tables of weights of materials, gallons of bitumuls required for various spreads and areas, and illustrated data on procedure. The information is specific, giving details of the best type of surface for roads, streets, airports, playgrounds, and other surfaces.

Year-Round Grader Does Many Municipal Jobs

945 The Adams motor grader, of all-welded and machine-finished construction, can be used for building and maintaining unpaved streets and alleys, for backfills over sewers, water mains, and gas pipes, and for grading and leveling. For data, write the J. D. Adams Mfg. Co., Indianapolis, Ind.

Batteries for Municipal Use

946 "Hand" storage batteries are particularly useful for standby and regular power on emergency vehicles: police radio cars, ambulances, and fire apparatus. Provided with heavy, hand-pasted tank-formed plates, heavy glass mats, and acid- and heat-resisting separators, the batteries are provided with hard rubber containers. For data, write The Hand Laboratory, Nyack, N. Y.

Easy Loading of Refuse

947 The Colecto-Pak is an all-enclosed, watertight disposal body with a ¾-yard loading bucket that automatically transfers the refuse to the central body where the refuse is packed. Transfer of the refuse to the body takes just one minute. For additional information and literature, write The Heil Co., Milwaukee 1, Wis.

No Caulking Necessary For Water Main Joints

948 Leadite is shipped dry; you can apply it easily and get a superior, leak-resistant joint that actually improves in water resistance with age. And you get this joint without caulking or digging bell holes. For information about this product for jointing cast-iron water mains, write The Leadite Co., Girard Trust Co. Bldg., Philadelphia 2, Pa.

The Selection of Lighting Standards

949 As important for adequate street lighting as the light itself is the standard chosen. Correct height, angulation, and extension are necessary to assure adequate lighting. For informations and specifications of the types of street lighting standards available, write the Union Metal Mfg. Co., Canton 5, Ohio.

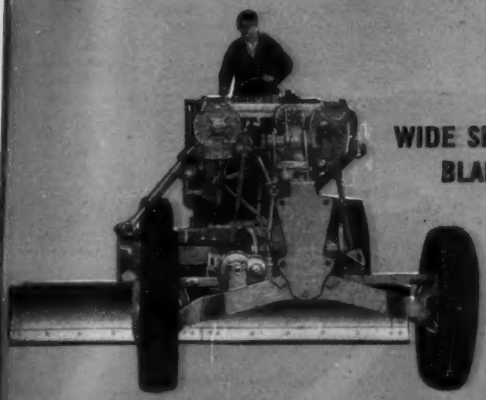
Improved Loading Equipment

950 The Hough Model HF is a ¾-yard "payloader" which is equipped with a fully reversible 4-speed transmission, combining practical loading speeds with high reverse maneuverability. Also available are the 10½-cubic-foot Model HA, and the 1-yard Model HL. For complete details, write The Frank G. Hough Co., 710 Sunnyside Ave., Libertyville, Ill.

Complete Line of Sanitation Equipment

951 Bulletin No. 35-B, distributed by the Hardinge Co., York, Pa., describes Hardinge's complete line of sanitation equipment—tank clarifiers, both circular and rectangular; digesters—for sewage and water treatment plants and industrial wastes. Included with the photographs are line drawings illustrating the internal structure of the equipment.

Adams Motor Graders
Your best buy—all ways



More Blade Positions

WITHOUT MECHANICAL ADJUSTMENTS

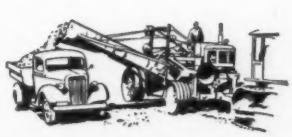
● Adams fast power-operated mechanical control system gives you the full range of blade positions shown above . . . *with blade centered on circle—without adjusting blade lift links.*

This important Adams advantage permits operator to obtain *all* average blade positions through simple maneuvering of the control levers—*without leaving the cab.* Even on more extreme work (which is seldom encountered) required blade positions are quickly obtained through easy adjustment of the telescopic lift links. Rarely is work so extreme that blade must be shifted on circle.

Here you have one more specific example of how Adams Motor Graders speed operations—reduce operator fatigue—improve work—lower operating costs. Ask your local dealer to demonstrate how Adams Motor Graders are *your best buy—in this way—and all ways.*

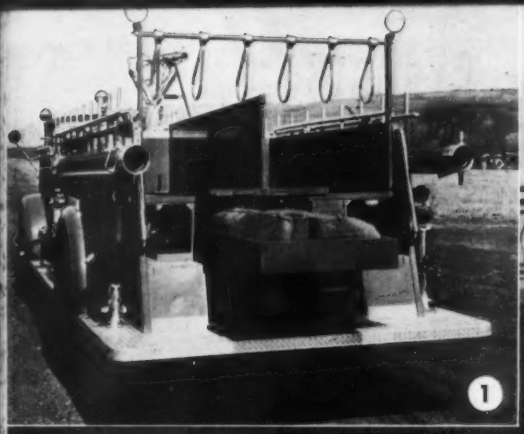
J. D. ADAMS MANUFACTURING CO. • INDIANAPOLIS, INDIANA

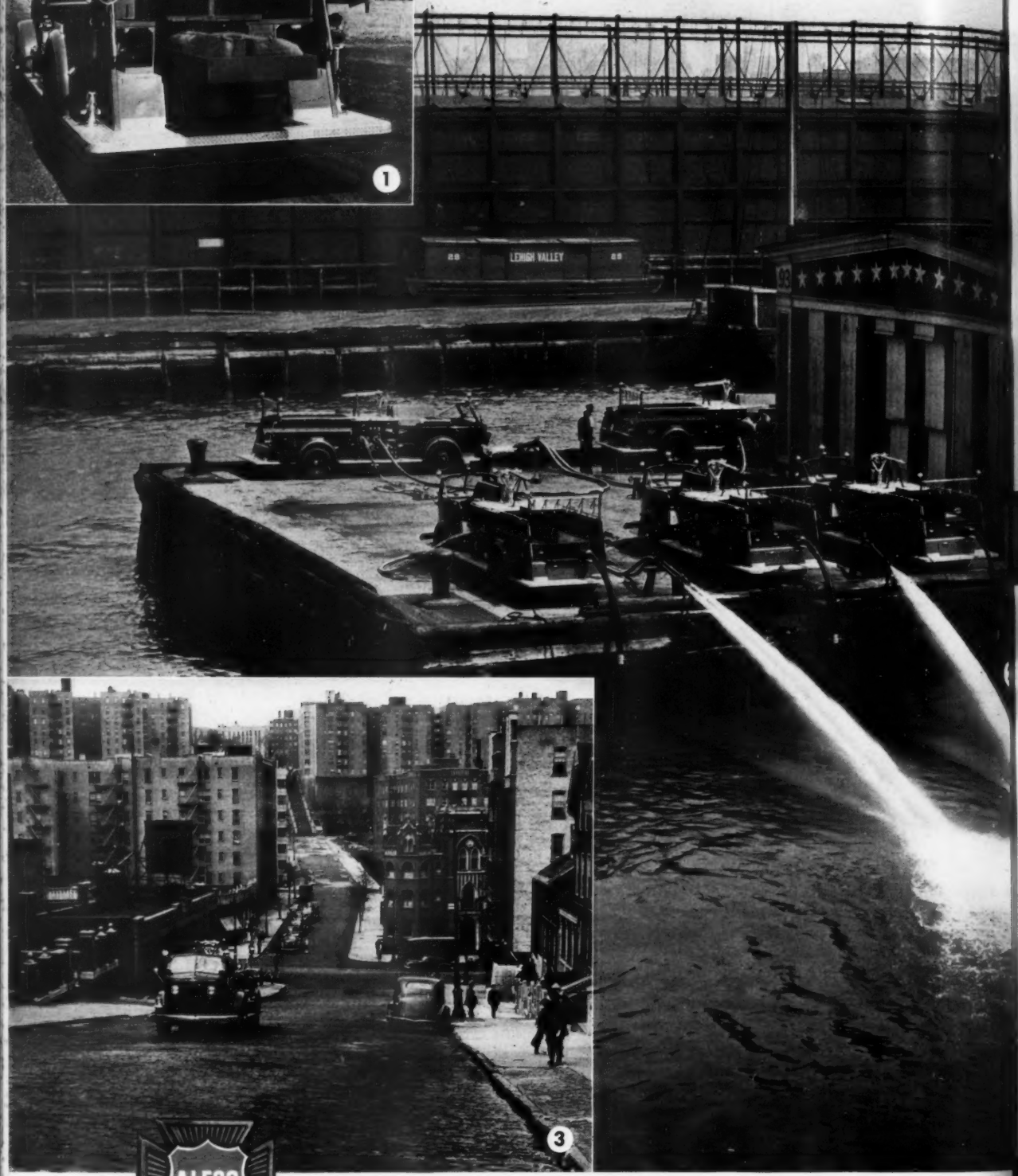
Adams



MOTOR GRADERS • LEANING WHEEL GRADERS • ELEVATING GRADERS

NEW YORK CIT





1. Rear view of New York City pumper showing hose body arrangement and life net mounting
2. Five of the pumpers on pump acceptance test
3. Pumpers undergoing acceleration and hill climbing test

JOINS THE GROWING LIST OF CITIES USING THE NEW

AMERICAN-LAFRANCE

CAB-AHEAD-OF-ENGINE-PUMPERS

TWENTY new 750 gallon American-LaFrance pumpers were recently tested and placed in active service by the New York Fire Department. The equipment test included 6½ hours of pumping at draft, (11' lift), 20 mile road test for acceleration, speed, hill climbing ability, and brake test. These new pumpers demonstrated the superior pump and road performance provided by this modern fire engine. See them in action in Madison Square Garden when the New York Fire Department stages the famous "Midnight Alarm" for the International Fire Chiefs Association Conference.

AMERICAN-LAFRANCE-FOAMITE CORPORATION

ELMIRA, NEW YORK, U. S. A.

LAFRANCE FIRE ENGINE AND FOAMITE LIMITED

TORONTO, 9, ONTARIO, CANADA

Chief

is your department outfitted for fall and winter protection?

Place Orders NOW for MIDWESTERN Protective Clothing

★ Important Safety Features

★ Tailored for Comfort

★ Softer, More Pliable

★ Made of Natural Rubber

Reinforced at every point of strain and wear. Made for protection, comfort and long wear. Note these features:

- Double-stitched seams
- Reinforced by rivets
- Heavy cloth lining
- Large, outside pockets
- Inside of fabric heavily napped cloth.

Our policy has always been to use *only* the finest materials in Midwestern products. Even though deliveries fell 'way behind the orders, we have consistently refused to buy inferior materials. When you buy Mackinaw Coats or other Midwestern protective clothing, you *know* you're buying top-quality merchandise—garments that give extra protection, built-in comfort, and long wear.

Now, with the improved availability of crude rubber, we are catching up on orders. However, it is still necessary to place your orders in advance of your requirements.

Remember, there is no substitute for quality.

Have your Midwestern dealer show you our new type natural rubber garment. Note the softness, the flexibility, the high grade materials used to assure long service, comfort, and real protection. Now available in white and ivory rubber, too.

Available for immediate delivery, subject to prior sale, all sizes firemen's short and 3/4 boots.

None Genuine Without this Trade-mark

MIDWESTERN MFG. CO.

109 Main St., Mackinaw, Ill.

Makers of the Famous MACKINAW Coats

FOR BETTER MUNICIPAL FIRE PROTECTION . . . ADD PORTO-PUMPER!

For any fire department, PORTO-PUMPER is a useful and necessary auxiliary. For small towns and villages, PORTO-PUMPER provides near-complete fire protection with the maximum in portability at lowest cost possible.

This high-pressure, high-output pumping unit takes water from any source—puts out the fire before it grows to disaster proportions by getting there first—by being there when you want it most.

This sturdy unit attaches to any vehicle—goes where heavy equipment cannot—is towed by hand where necessary. Unit consists basically of independently powered high-pressure demountable pump—plus hose, ladders, axe and extinguisher, extra nozzles and hydrant adapters.

Best of all, PORTO-PUMPER is lowest priced on the market. Your budget can accommodate it—your safety demands it. Write now for details—be prepared to advise tourist court owners, industrials, all those beyond the umbrella of protection by city equipment.

PORTO-PUMP, INC.

227 IRON STREET DETROIT 7, MICHIGAN

When considering your next fire fighting apparatus—"Consider Ward LaFrance First."

WARD LA FRANCE TRUCK DIV., Elmira, N. Y.

FOR STOPPING LEAKS IN PIPE LINES...

Emergency Pipe Clamp—the universal repair clamp the world over, for nearly half a century! Easy to apply. Saves cost of new pipe—eliminates job of tearing out old and putting in new.

M. B. SKINNER CO.
SOUTH BEND 21, INDIANA

SKINNER-SEAL EMERGENCY PIPE CLAMPS

A Handy Way to Build Streets

Here the A-C 60 drawbar hp. Diesel tractor and 5-yd. scraper constructs streets on a new subdivision at Cincinnati, Ohio. Especially ideal for this type of work.

llis-Chalmers
iesel Tractor
ith Gar Wood
-Wheel Scraper

STREET construction is made easier with this fast-stepping tractor-scraper combination. A one-man outfit . . . it handles numerous miscellaneous jobs and practically all dirt-moving operations. Digs, carries, rear-dumps — you can spot material exactly where you want it, quickly, conveniently. Responsive, highly maneuverable, it's easy to operate in narrow quarters. Loads toughest materials, too — including gumbo, shale or hardpan — made possible by the greater sustained pulling power of Allis-Chalmers Diesel Tractors and exceptional digging ability of Gar Wood 2-wheel scrapers.

Your Allis-Chalmers dealer will gladly give you all the facts on this handy way to build streets. *Investigate!*

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Snow-Plows...FACTORY CLOSE-OUT

RARE BARGAIN! Opportunity for municipality, distributor, or manufacturer to obtain about 30 unassembled snow plows.

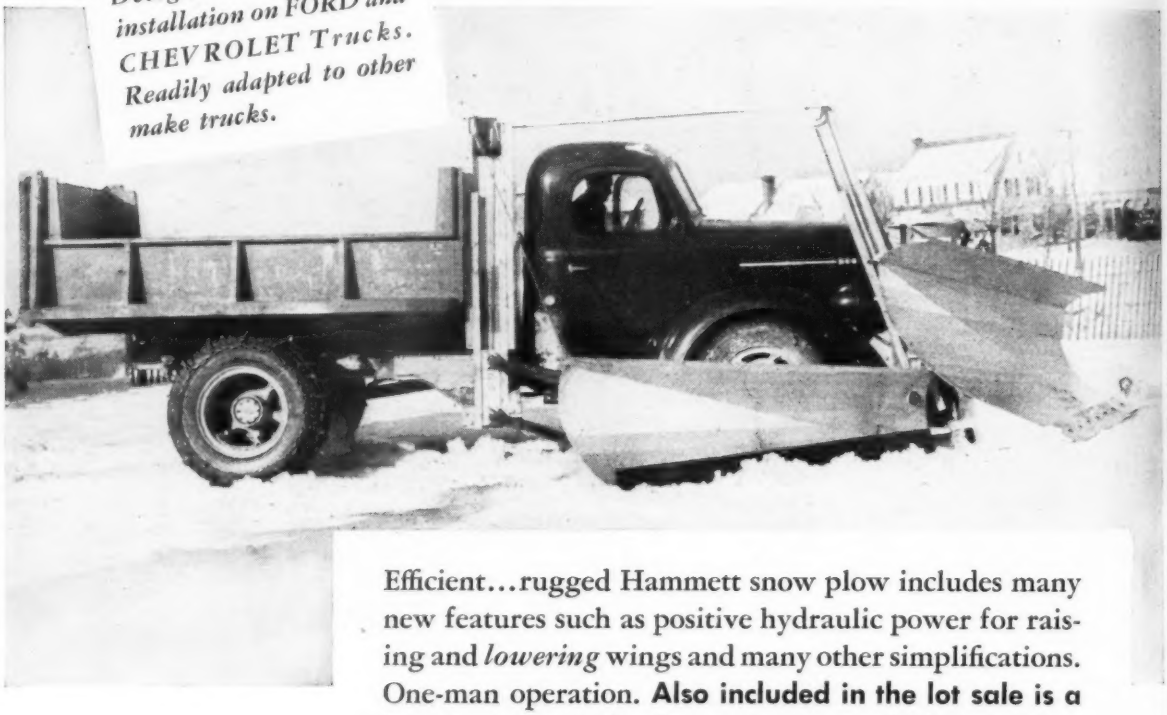
Total Estimated Value $80,000

CASH PRICE for entire inventory $27,450

F.O.B. TROY, N.Y.

Subject to prior sale. Whole lot sale only.

Designed for immediate installation on FORD and CHEVROLET Trucks. Readily adapted to other make trucks.



Efficient...rugged Hammett snow plow includes many new features such as positive hydraulic power for raising and *lowering* wings and many other simplifications. One-man operation. **Also included in the lot sale is a large excess stock of spare parts, including Vickers hydraulic valves, V-blades, wings, finished shoes and similar fittings.**

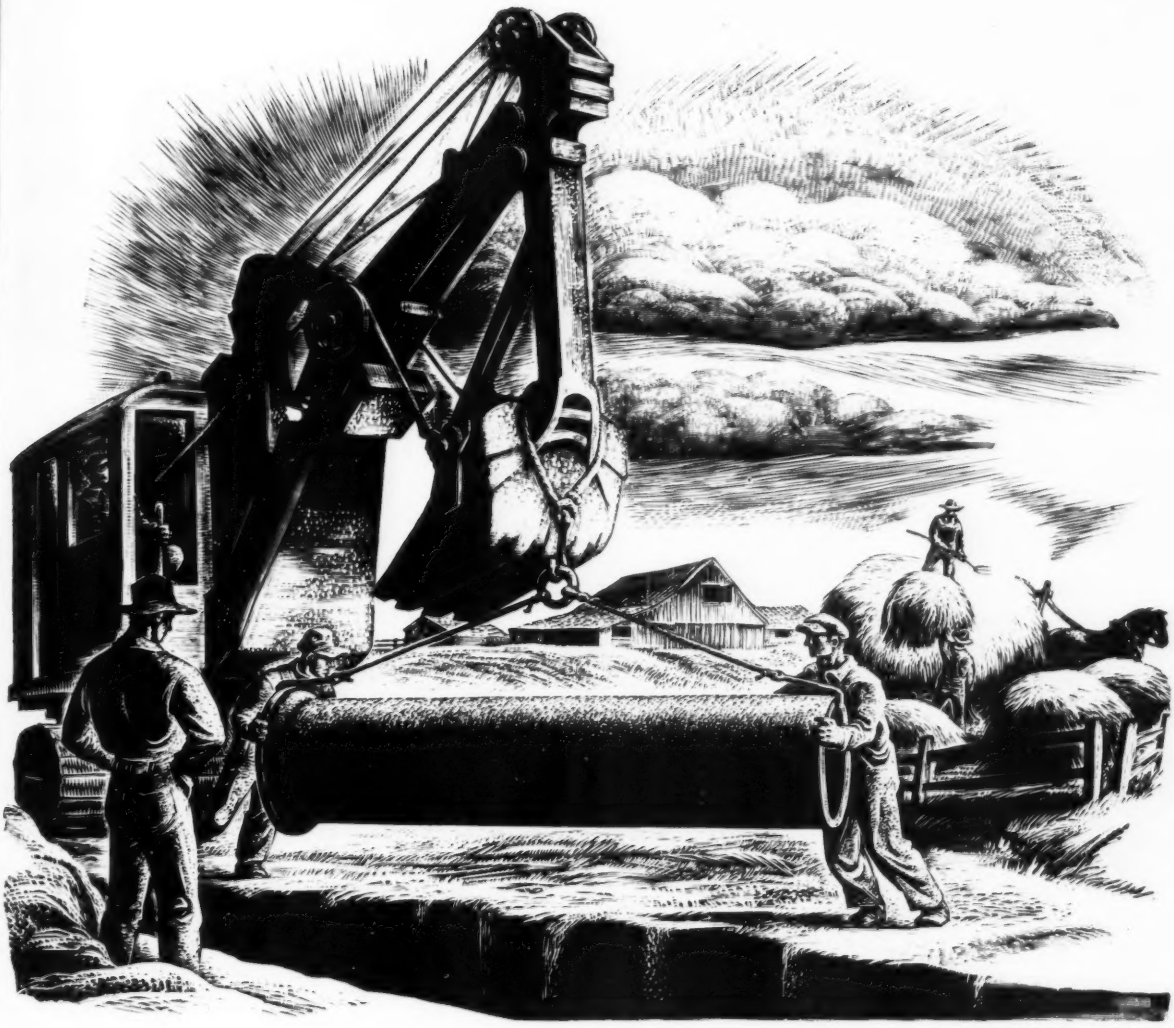
This disposal sale is being made by new owner to clear plant for manufacture of his products. Movie of plow in action will be shown on request to responsible, interested parties. Complete list of parts available.

Specially trained mechanic available to assist in initial assembly.

WRITE or WIRE now for full information

AMERICAN MOTORS INCORPORATED

250 PARK AVENUE, NEW YORK 17, N. Y. • PHONE: PLaza 3-5695



Original Woodcut by Lynd Ward

The life of a supply line, to be constructed with cast iron pipe, is obviously more predictable than the future growth of the community it is to serve. City planners may hazard a prediction of population growth in a hundred years. Water works engineers can predict, on the basis of proved service records, that a properly constructed cast iron supply line will have a useful life of *more* than a century. A substantial part of the tonnage of large diameter cast iron pipe, installed for supply lines throughout America, is U. S. Cast Iron Pipe.

U.S.
cast iron
PIPE

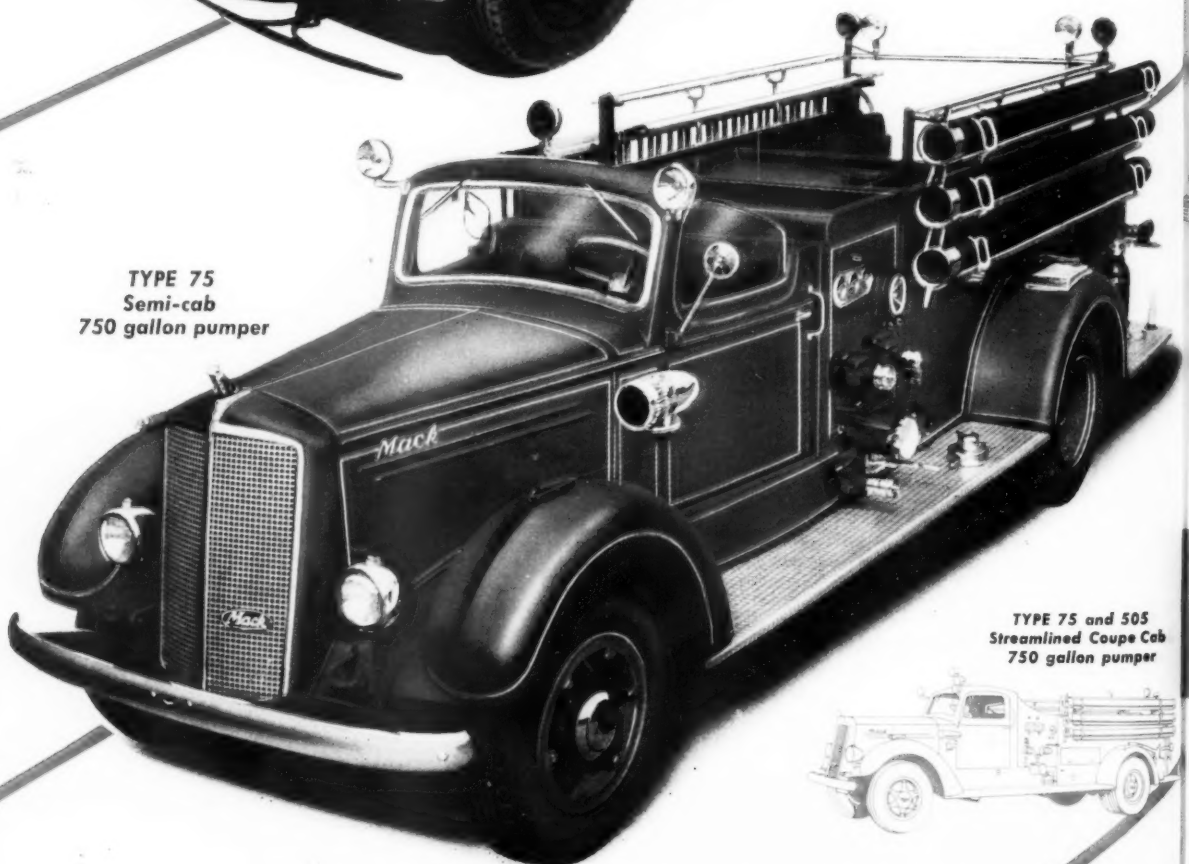
U. S. PIPE & FOUNDRY CO.
General Offices: Burlington, N. J.
Plants and Sales Offices throughout U.S.A.

For Performance . . . For Reliability . . .

Modernize *with* Macks!

TYPE 45
Coupe Cab
Squad Car

TYPE 45
Standard Body
500 gallon pumper



TYPE 75
Semi-cab
750 gallon pumper

TYPE 75 and 505
Streamlined Coupe Cab
750 gallon pumper

TRIPLE COMBINATION PUMPERS — 500 TO 1250 GALLON QUAD

For Service . . .

TYPE 95
Semi-cab
1000 gallon pumper

TYPE 19
City Service Truck
Booster Equipped

TYPE 85
Canopy or Sedan Cab
750 gallon pumper

● From coast to coast — in over 1,000 departments — Mack firefighters are delivering the kind of reliable performance that has made Mack apparatus famous for 37 years. Mack leadership is maintained through resources which permit constant improvement... through extensive laboratories... facilities for highest quality construction... progressive engineering ...broad experience in fire apparatus manufacturing since 1910. In addition, every investment in Mack equipment is protected by the nationwide network of 67 Mack factory branches and over 600 authorized dealers, a ready source of skilled service and parts. Whether your department is large or small, there are precision-built modern Macks suited for your purpose.

Mack

Fire Apparatus

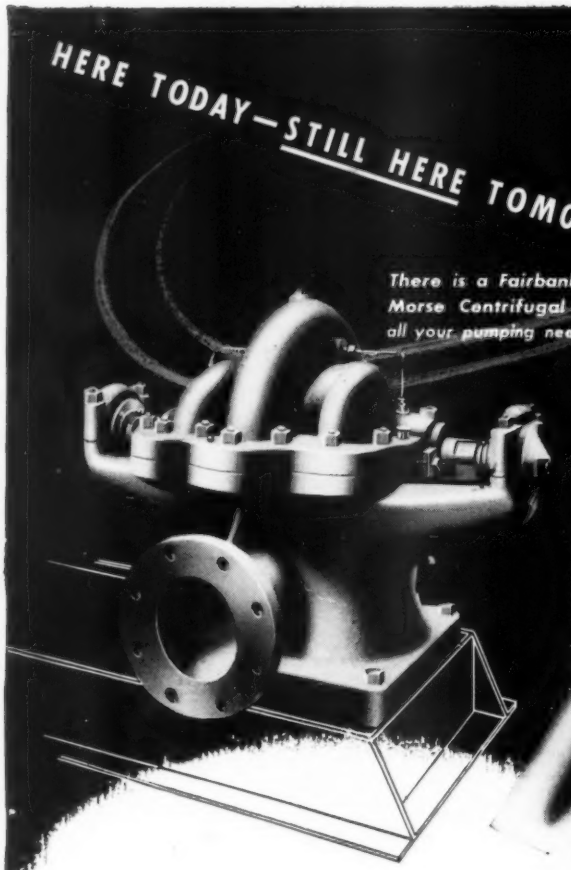
MACK MANUFACTURING CORPORATION
Fire Apparatus Division
Long Island City 1, N. Y.

Factory branches and dealers in all principal cities for service and parts. In Canada, Mack Trucks of Canada, Ltd.

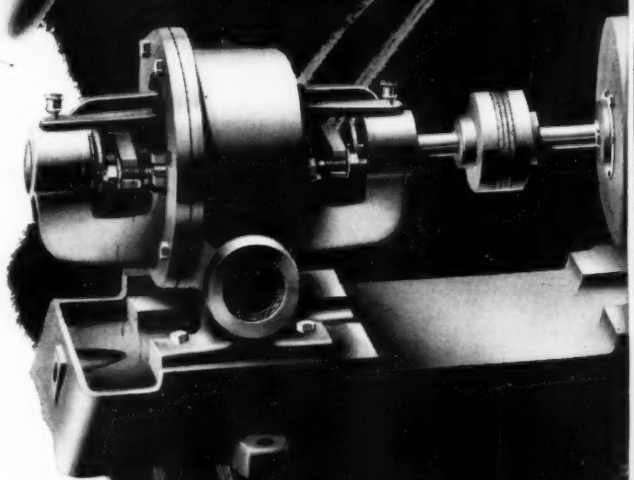
...QUAD CARS . . . CITY SERVICE AND QUADRUPLE COMBINATION LADDER TRUCKS

HERE TODAY—STILL HERE TOMORROW!

There is a Fairbanks-Morse Centrifugal for all your pumping needs.



Fairbanks-Morse-Pomona deepwell turbine pumps. Oil or water lubricated; open or closed impellers—as your job requires.



Famous Westco turbine-type pumps have exclusive advantages for service involving small capacities, high heads and low speeds.

The values in doing business with one of the hundreds of well-established, progressive Fairbanks-Morse pump dealers are many:

First, of course, you gain immediate advantages from the intensive research, skilled productive techniques and well-developed service organization that have long been identified with the Fairbanks-Morse name.

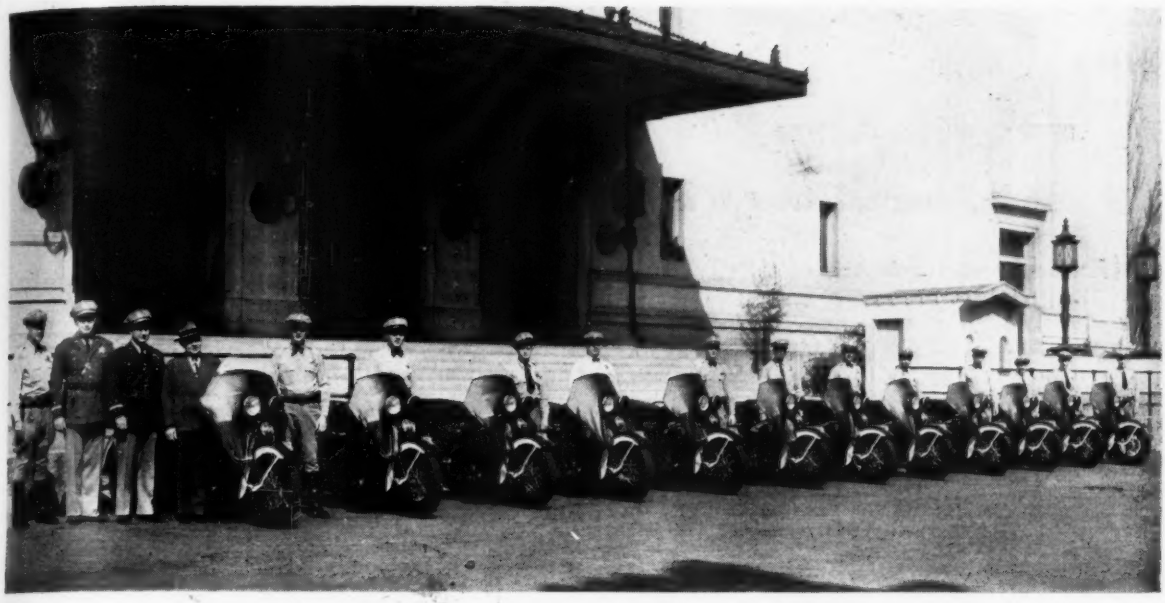
Too, you gain the long-term advantages of continued aid in keeping your pumps on the job—continued benefits from the widespread, quickly available Fairbanks-Morse dealer organization.

For a pump that's to give high efficiency year after year, buy from the dealer who will stand by you, year after year. See your Fairbanks-Morse pump dealer for all your pumping requirements.

FAIRBANKS-MORSE

A name worth remembering

DIESEL LOCOMOTIVES • DIESEL ENGINES • PUMPS • SCALES • MOTORS • GENERATORS • STOKERS • RAILROAD MOTOR CARS and STANDPIPES • FARM EQUIPMENT • MAGNETOS



Chief of Police Robert P. Tracy (fourth from left) proudly inspects the Harley-Davidson Servi-Cars recently added by the Oakland Police Department.

Oakland, California, Adds Twelve 1947

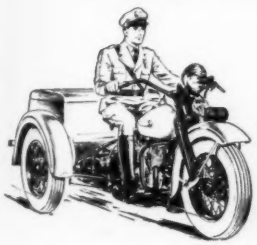
HARLEY-DAVIDSON SERVI-CARS

to More Effectively Cope with Increased Traffic Problems

IN CITY AFTER CITY — just as in Oakland — police departments are proving that the Servi-Car is the most efficient unit ever devised for handling the full range of vexing traffic and parking problems that are on the increase in all congested areas. One officer on a Servi-Car does a better job of car marking than four to six men on foot. Thus, urgently needed manpower is released for other police duties. Out in the open where motorists can see him, the Servi-Car officer's presence automatically influences drivers to obey traffic regulations.

Cities with parking meters find the Servi-Car indispensable. Over-parkers are spotted quickly — parking areas are covered faster and more frequently. Collections are made in a hurry — and when meters require repairs, the Servi-Car takes the service man to the job and back again with least loss of time. What's more, any man on the force can handle the Servi-Car with its three-wheel stability. Being narrow, it slips through heavy traffic with ease — yet there's ample room for radio, fire extinguishers and other police equipment. The efficiency of the Servi-Car is evidenced by its great popularity — more than 300 police departments from coast to coast have purchased 1947 Servi-Cars. Call in your Harley-Davidson dealer and have him give you information about the famous Servi-Car and its many uses in police work.

HARLEY-DAVIDSON MOTOR COMPANY • Milwaukee 1, Wisconsin



HARLEY-DAVIDSON
POLICE MOTORCYCLES

THESE...

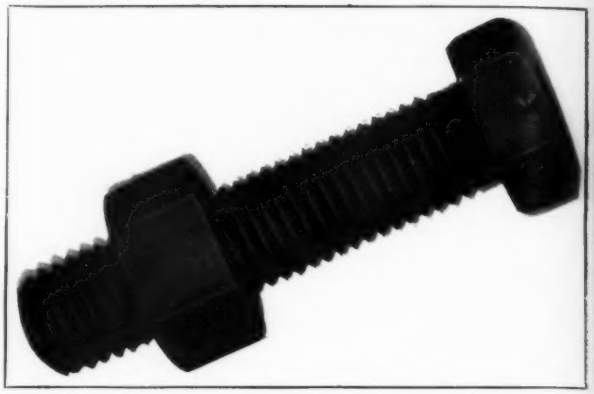
(Failed in performance of duty)

OR

DURONZE V

(Tensile strength over 100,000 psi)

(Rustless, Resists Season Cracking)



Duronze* Meter Bolts and Nuts Will Appreciably Reduce Maintenance Costs

Meter bolts are probably the least expensive item in the construction of water meters, yet the costly nuisance of rusty, "frozen" bolts and nuts, or the failure of certain type of non-ferrous bolts may ruin what is otherwise an excellent product.

Buy bolts, nuts and parts made from Duronze V (silicon bronze)—rustless—remarkably strong—over 100,000 psi—a figure which is considerably higher than the strength of ordinary steel bolts when new. Further, Duronze V bolts resist stress corrosion cracking.

From a maintenance angle, Duronze bolts and nuts can be used over and over again without deterioration—at a substantial saving in maintenance because they do not "freeze".

Communities planning new installations or modernization of existing facilities; manufacturers of water meters and other equipment will find it profitable to investigate the use of bolts, nuts and other parts made of Duronze Alloys. Write for the 80-page Duronze Manual containing valuable data and suggested applications for five modern engineering alloys. *Trade-mark Reg. U. S. Pat. Off.

"Bridgeport" BRASS CO.

BRIDGEPORT BRASS COMPANY
BRIDGEPORT 2, CONN. *Established 1865*

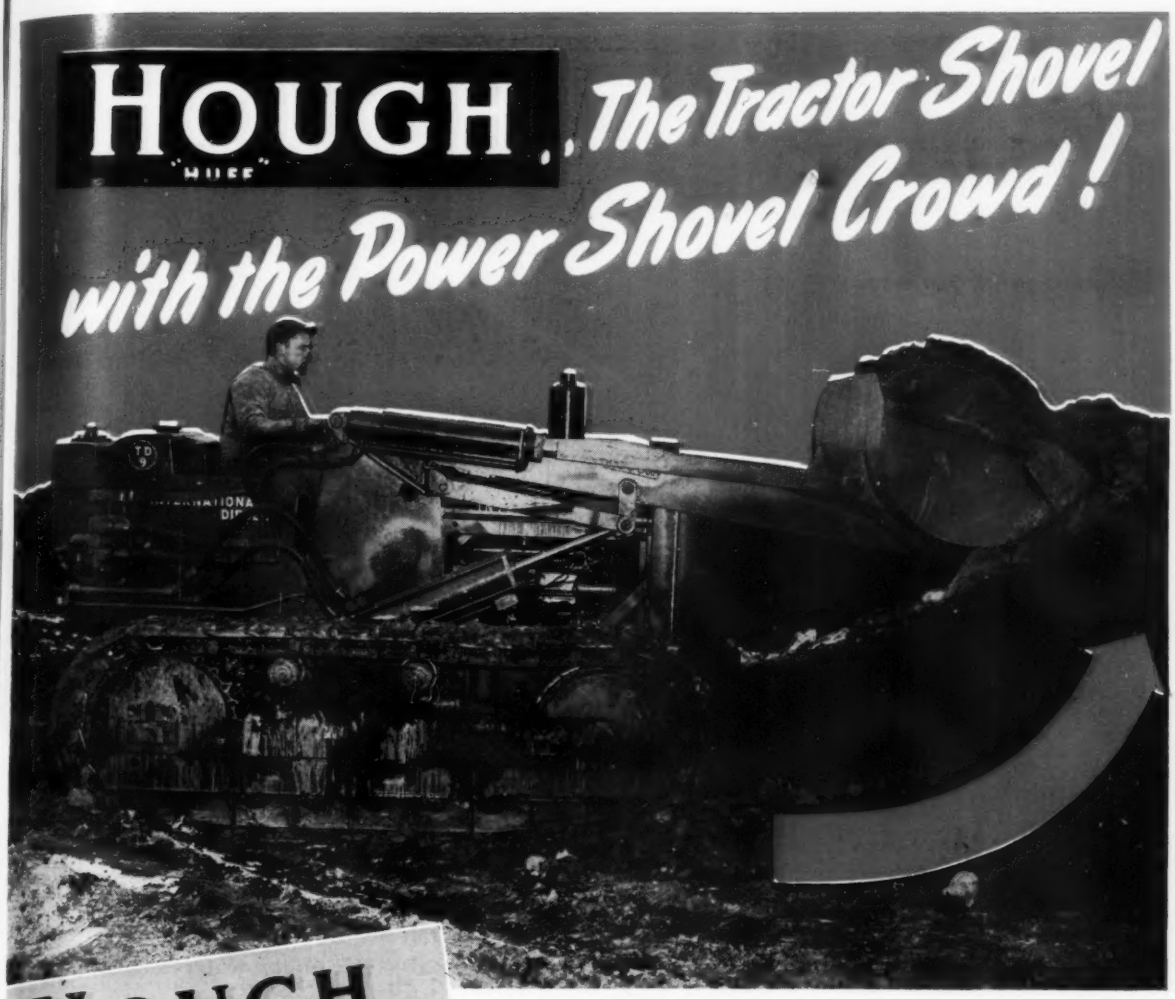
BRASS • COPPER
BRONZE • DURONZE
CUPRO NICKEL
NICKEL SILVER
Strip • Rod
Wire • Tubing

Duronze Alloys—PRODUCTS OF

BRIDGEPORT BRASS

HOUGH "HUFF"

..The Tractor Shovel with the Power Shovel Crowd!



The Hough Bulldozer-Shovel gives you true crowding action...faster, easier penetration into the face of the cut ...full capacity bucket loads, because the Bucket crowds forward a full 19", exclusive of the forward motion of the tractor. In addition, as the bucket is raised it tips back automatically 38° turning the Bucket cutting edge into the cut for better cutting action, thereby assuring full Bucket capacity as well as preventing spillage.

The Hough 1 Yd. Bulldozer-Shovel, built for International Model T9 and TD-9 Crawler Tractors, has many more yardage producing features—the hydraulic dump, oscillating tracks, down pressure, complete visibility, fast operating cycle, plus ready convertibility for Bulldozer use — features which add up to lower cost yardage on any job. For complete details see your near-by Hough-International Industrial Distributor.

HOUGH "HUFF" Payloader PATENTED

MODEL HF

A MOBILE VERSATILE SHOVEL

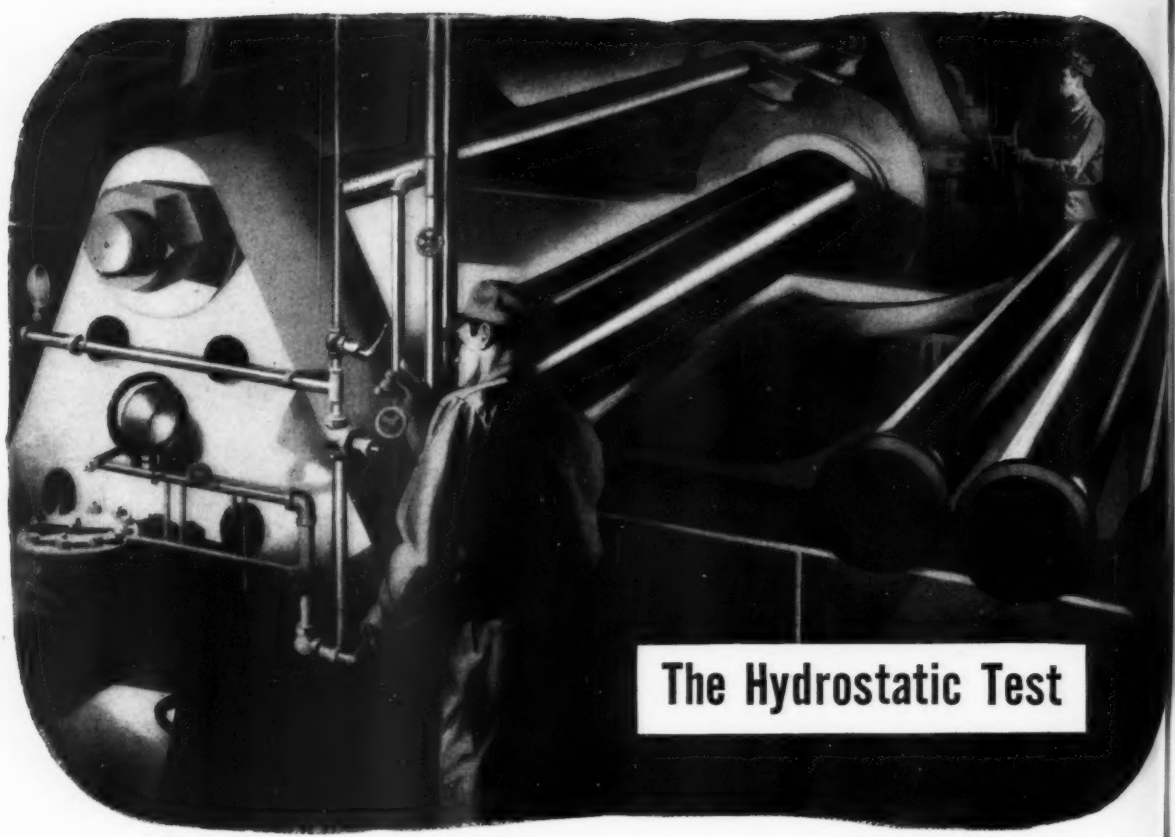
The 3/4 Yd. Model HF is the newest addition to the famous Hough Payloader line. It digs, loads, carries, dumps, grades . . . truly a one man construction crew. Bulldozer blade and crane hook available to increase its utility. Send for complete details in new bulletin No. 166.

PROVEN OVER 6500 HOUGH TRACTOR SHOVELS BUILT PERFORMANCE

THE FRANK G. HOUGH CO.

MATERIAL HANDLING EQUIPMENT SINCE 1920

710 SUNNYSIDE AVE. LIBERTYVILLE, ILL.



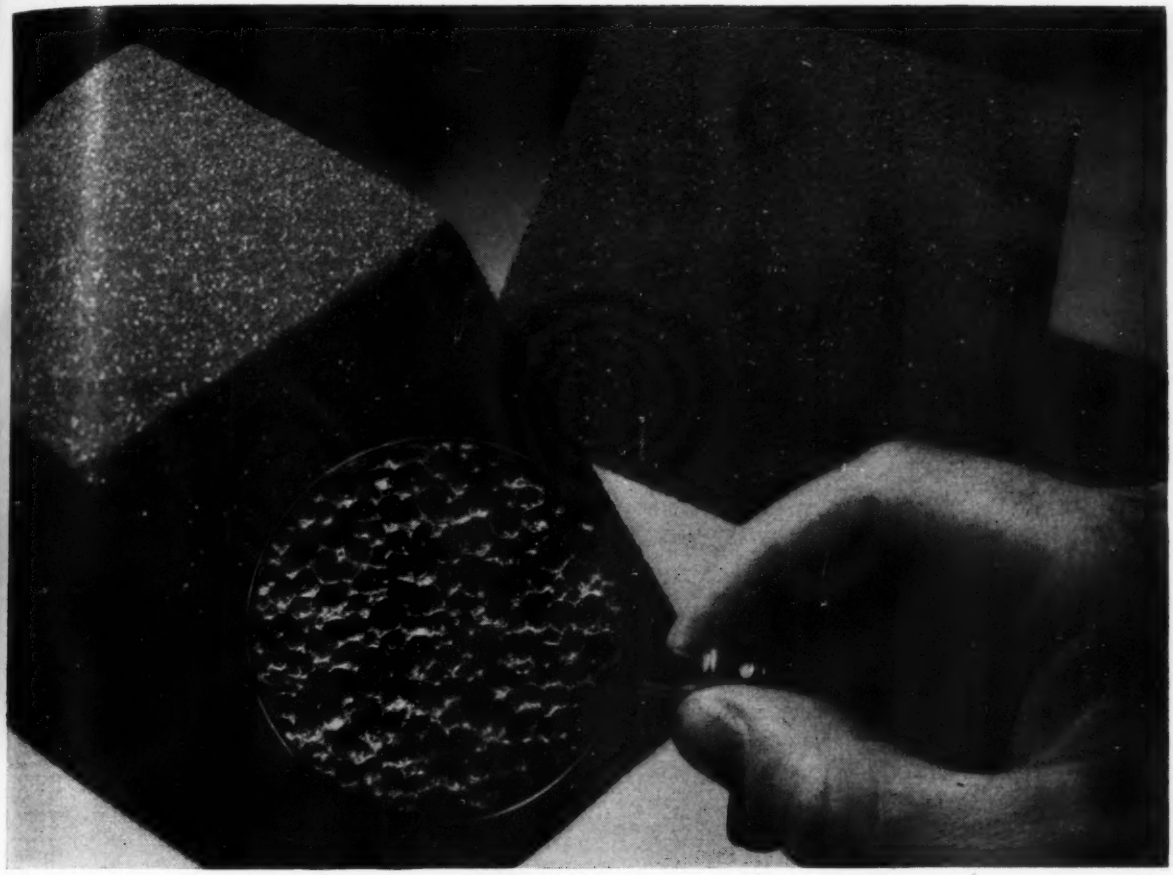
YOU can't buy a length of cast iron pipe for love or money unless it has passed the Hydrostatic Test at the foundry. Every full length of cast iron pipe is subjected to this test under water pressures considerably higher than rated working pressures. It must pass the test or go to the scrap pile.

The Hydrostatic Test is the final one of a series of routine tests made by pipe manufacturers to ensure that the quality of the pipe meets or exceeds the requirements of standard specifications for cast iron pressure pipe.

Few pipe buyers realize the extent of the inspections, analyses and tests involved in the quality-control of cast iron pipe. Production controls start almost literally from the ground up with the inspection, analysis and checking of raw materials—continue with constant control of cupola operation and analysis of the melt—and end with inspections and a series of acceptance and routine tests of the finished product. Cast Iron Pipe Research Association, Thos F. Wolfe, Engineer, Peoples Gas Bldg., Chicago 3, Illinois.

CAST IRON PIPE
SERVES FOR CENTURIES

LOOK FOR THIS MARK IT IDENTIFIES CAST IRON PIPE



HERE'S THE SECRET OF Permanent Insulation

● Look at the picture for a minute. You can see that PC Foamglas is composed of tiny glass cells . . . millions of them. And these cells are filled with sealed-in air.

Used as an insulating material on roofs and in walls and floors, PC Foamglas helps to maintain desired temperature levels and to minimize condensation. Because it is glass—and therefore waterproof, verminproof and fireproof—it also has the unique advantage of retaining its insulating value *permanently*.

When you are figuring insulation, our engineers will be glad to help you decide on the *proper thickness* of PC Foamglas to give you efficient, permanent insulation. Meanwhile, send the coupon for your selection of our helpful, informative free booklets. Pittsburgh Corning Corporation, 632 Duquesne Way, Pittsburgh 22, Pa.

· *Also Makers of PC Glass Blocks* ·

PC FOAMGLAS *Waterproof Fireproof* **INSULATION**

T. M. REG. U. S. PAT. OFF.

Pittsburgh Corning Corporation
Room 467, 632 Duquesne Way
Pittsburgh 22, Pa.

Please send me without obligation, your free booklets on the use of PC Foamglas insulation for:

Roofs_____ Walls_____ Floors_____

Name_____

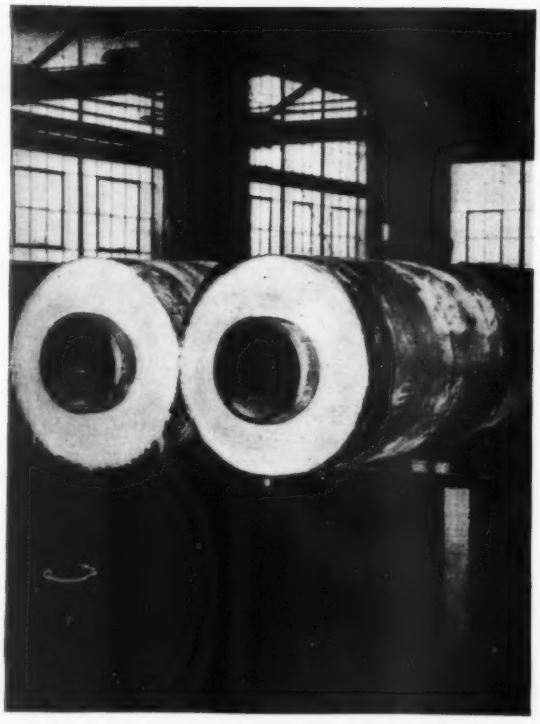
Address_____

City_____ State_____

FOR ADDITIONAL INFORMATION SEE OUR INSERTS IN SWEET'S CATALOGS.

STEAM AT 650 PSI, 750° F THROUGH CITY STREETS OF ROCHESTER, N. Y.!

RIC-WIL PREFABRICATED UNITS FORM UNDERGROUND SECTIONS OF MILE-LONG TIE-LINE SUPPLYING 200,000 LBS. MORE STEAM PER HOUR WITH NO INCREASE IN BOILER EQUIPMENT



AT THE FACTORY: 10 inch extra heavy steel pipe in 21 foot lengths was covered with 3½ in. thick high-temperature insulation and encased in 16 gauge corrugated galvanized iron conduit.

● In the Rochester Gas & Electric Corp.'s new tie-line, steam is transmitted through the business district at 650 PSI, 750° F., one of the highest pressures ever maintained under city streets. Carried at this pressure for a distance of approximately a mile, the steam is fed through a desuperheating station and reduced to 250 PSI, 500° F. before entering the distribution system. With this tie-line, which utilizes excess steam capacity from one generating plant to serve additional customers of another, the utility company struck a happy balance between supply and demand. Service was extended without the necessity for new building construction or new boiler equipment. Ric-wiL Insulated Pipe Units, prefabricated at the factory to meet the specific requirements of this tie-line, provided ease and speed of installation.

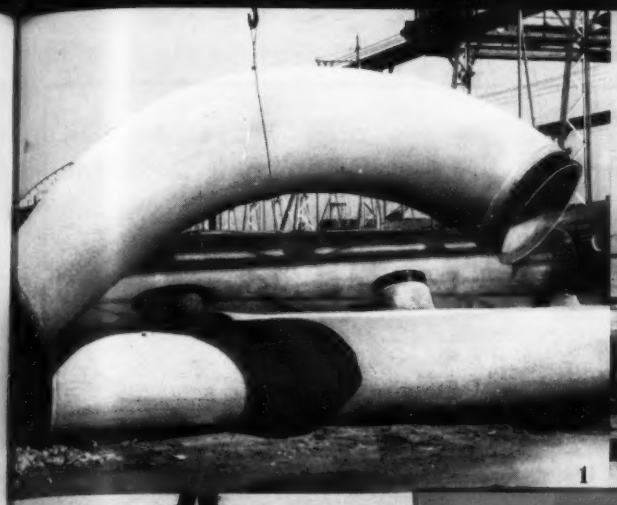
If you have an underground or overhead pipe distribution problem, write for complete information.

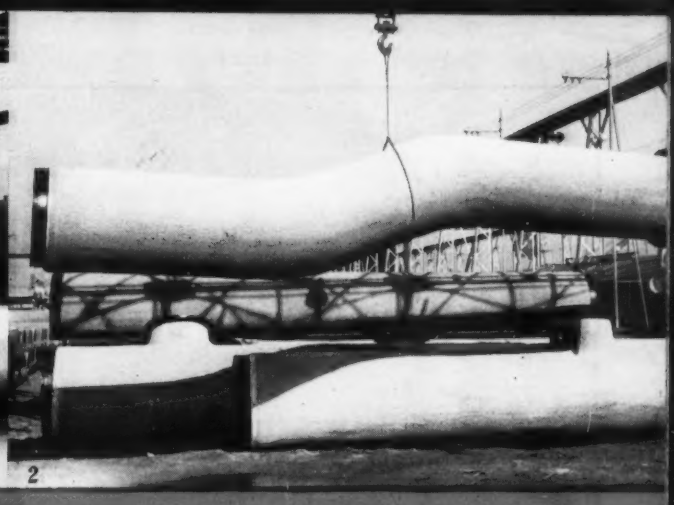
RIC-WIL

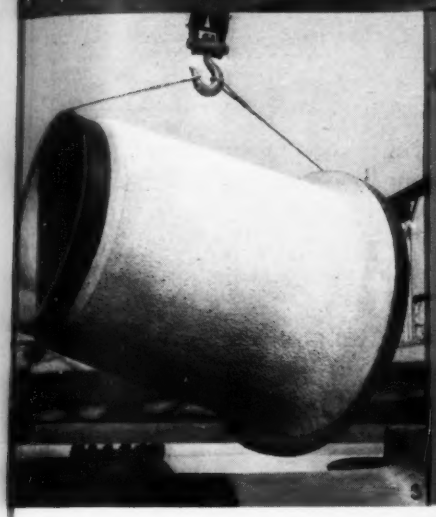
INSULATED PIPE CONDUIT SYSTEMS

THE RIC-WIL COMPANY • CLEVELAND, OHIO

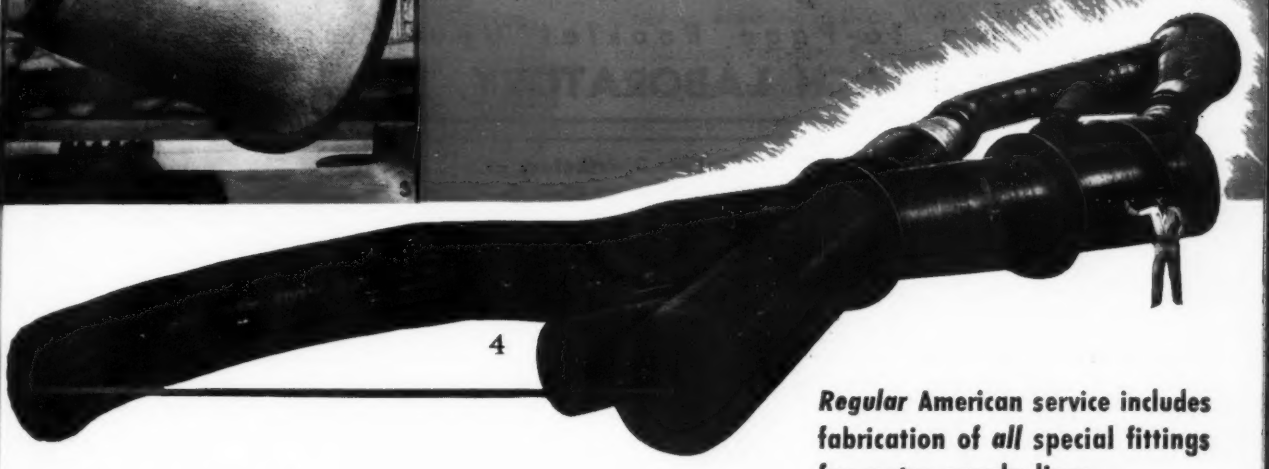
CABLE ADDRESS: RICWIL, BENTLEY'S CODE







They're not *really* special!



Regular American service includes fabrication of *all* special fittings for water supply lines.

Illustrations show typical special fittings as follows:—

1. Bend (foreground) and special pipe with flanged outlets;
2. Reverse bend — right end flanged, Lock Joint rubber gasket joint on left end;
3. Reducer section with caulking ends;
4. Example of a complicated manifold section.

Quality pipe line products manufactured and installed by American include:—— Lock Joint Concrete Cylinder Pipe, Prestressed Lock Joint Concrete Cylinder Pipe, American Concrete Cylinder Pipe, Centrifugal Concrete Pressure Pipe.

• • •

Main Offices and Plant—
4653 Firestone Blvd., South Gate, Calif.

District Offices and Plants—
Oakland San Diego Portland, Oregon

Correctly engineered and manufactured fittings for reinforced concrete pressure pipe lines are vital to efficient and economical operation. That's why American designs, manufactures and thoroughly tests all bends, manifolds, reducers and similar units in its own plants.

Fittings can be supplied for all special water supply line requirements. This company has enjoyed a wide experience in the field of water supply line engineering and construction over a long period of years and this experience and training are available to water works officials and engineers. Information available upon request.

American
PIPE & CONSTRUCTION COMPANY

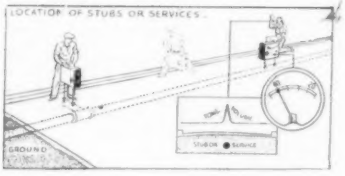
Concrete Pipe for Main Water Supply Lines, Storm & Sanitary Sewers, Subaqueous Pipe Lines

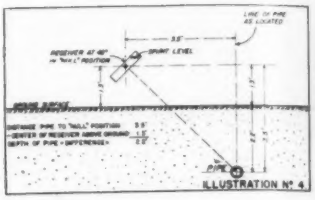
P. O. Box 3428, Terminal Annex, Los Angeles 54, California

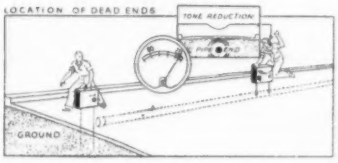
Buried Pipe and Cable Finder

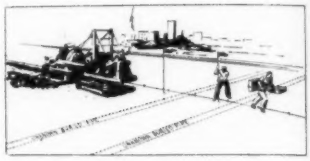
M-SCOPE

Water and Oil Leak Detector









The M-Scope is solving—successfully—the varied problems involved in the development, operation and maintenance of buried pipe and cable systems and is in daily use by representative organizations in such important groups as:

- MUNICIPALITIES
- GOVERNMENT PROJECTS
- SEWERAGE AND WATER PLANTS
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Eastern Distributors of
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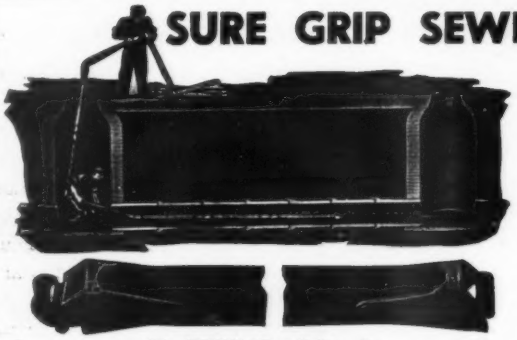
Joseph G. Pollard Co., Inc.

PIPE LINE EQUIPMENT

141 ASHLAND PLACE, BROOKLYN 1, NEW YORK

SURE GRIP SEWER RODS and ACCESSORIES



The REGULAR, a light rod,
Fir stock 1¼ x 1¼ inch square.

are joined together with a dual lock forming a rigid chain that will float. They can be coupled or uncoupled upon the street if desired. Made in two sizes.

The MASTER, a heavy duty rod,
Fir stock 1½ x 1½ inch square.

Write for catalog on complete line of sewer cleaning equipment.

EXPANDING SEWER MACHINE CO.
NAPPANEE, IND.

BUY U. S. SAVINGS BONDS

Regularly

Ask where you work . . . Ask where you bank

Still in there... PUMPING!

WATER LUBRICATION

No on-the-job column changes necessary

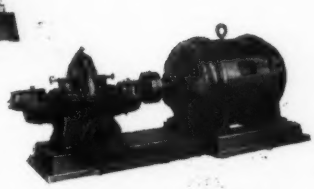
DEEP WELL TURBINES

• ***Features:*** Deep bronze packing box, designed for high pressure with minimum leakage. Top line shaft bearing, located *at top* of column, eliminates whipping through packing box. Bronze enclosed impellers have uniform, hand finished water passages. Given final machining after assembly on shaft to insure correct running clearances and rotative balance.

Send for Bulletin 245

AMERICAN PUMPS installed many years ago are still delivering specified quantities of water at low cost on farms, in municipalities and industrial plants throughout the world. Today, with modern improvements, materials, and methods of manufacture, American pumps assure even more efficient operation and trouble-free service. They are available in Deep Well Turbines, Double Suction, Two Stage Centrifugals, Single Stage Centrifugals with open or closed impellers, Axial and Mixed Flow, Sewage and Sludge.

These pumps are designed to perform properly within a definite range. We suggest, therefore, that you submit your pumping problem to our engineering staff. Their recommendation will be based upon wide installation experience and sound engineering practice.



DOUBLE SUCTION PUMPS

For a wide range of applications in general water supply. Split case, ball bearing design. Enclosed type bronze impeller with all water passages hand finished and exterior surfaces machined.

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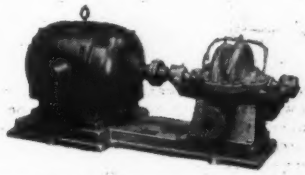

TWO STAGE CENTRIFUGAL PUMPS

For water booster service. Split case design. Passage from first to second stage entirely within casing, reducing friction losses to minimum. Back-to-back, single suction, bronze enclosed impellers.

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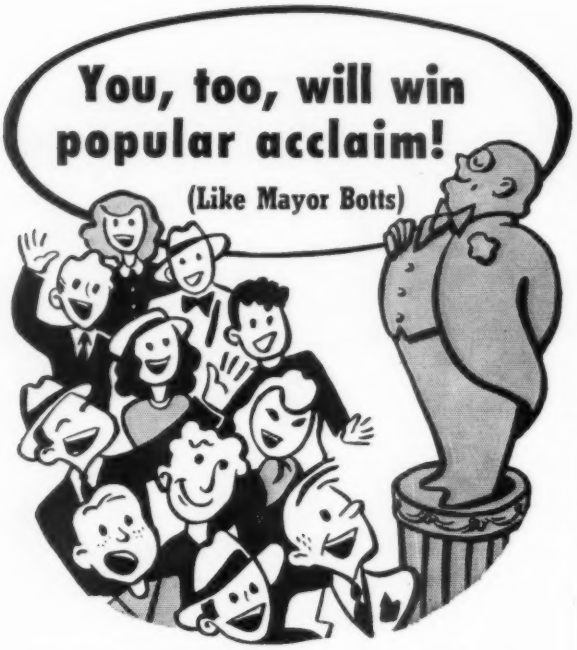
Offices: Chicago • New York • Cleveland • Cincinnati • Kansas City • Sales Representatives throughout the World



Troubles haunted Mayor Botts. Like most public servants, he couldn't seem to please everybody. But in nearby Centerville, he heard the people were very pleased about something. So Botts approached his rival, the mayor of Centerville. . .

BOTTS: What have you been doing to win this unusual public favor?

RIVAL: (proudly) We brought soft water to Centerville—it's wonderful!

BOTTS: (amazed) What, contented constituents from soft water? I've got to see that!

RIVAL: (taking Botts' arm) Come on—I'll prove it.

MRS. S: (over the weekly wash) Soft water? See for yourself—look at my whiter, cleaner clothes . . . and it saves soap, lots of soap!

BOTTS: (to himself) The women must love it!

MR. S: (from bathtub) Ah, yes . . . bathing and shaving are almost fun with soft water. And it saves plumbing repairs and fuel costs.

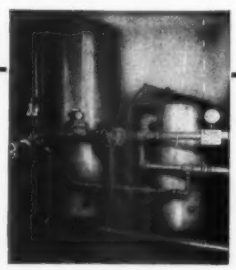
BOTTS: (to rival) And the men like it too.

GRANDMA S: (washing dishes) See how these dishes sparkle. That's because there are no greasy soap curds.

BOTTS: (shouting) Sensational!!!

At last, Mayor Botts learned to please everybody—a Refinite municipal soft water plant, of course! What happened? Well, the Council caught his enthusiasm and voted soft water unanimously. Everyone is pleased with Botts.

Write for information on soft water for your town.



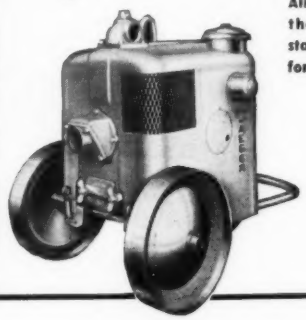
The Refinite Corporation

REFINITE BUILDING • OMAHA NEBRASKA

JAEGER "SURE PRIME"

. . . the only pumps with protected performance

All-weather enclosures keep them clean, dry, quicker-starting, smoother running—for the life of the pump.



Quickly accessible

Extra powered, conservatively rated and faster and doubly-sure to prime, a Jaeger is a more efficient pump to start with and maintains that high efficiency for longer years of life. Sizes to 10". Send for Catalog P-45.

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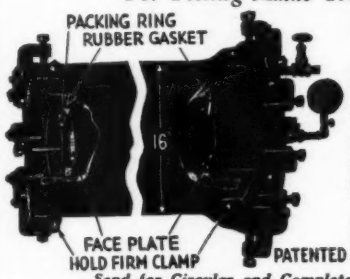
MIXERS • COMPRESSORS • HOISTS • LOADERS • PAVING EQPT.

"HOLD FIRM"

A NEW TEST PLUG

For Testing Mains Conveying



WATER GAS OIL AIR

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For testing cast iron, steel, transite, soil and concrete pipe lines, without the necessity of valves; test pipe as you lay them; eliminate open trench and hazards; special for testing reclaimed pipe, valves and fittings. Installed by any unskilled laborer; withstands 300 lbs. hydrostatic pressure, light in weight; same clamps fit many sizes of pipe. Made in all sizes. Used by the City of Chicago, contractors and municipalities.

Send for Circular and Complete Information

TEST PLUG MFG. CO. (not Inc.) SKOKIE, ILL.

LEADITE

FOR JOINTING CAST-IRON WATER MAINS

Melted and Poured ***No Large Bell-holes to Dig***
Saves at Least 75%

Leadite is shipped in powder form, packed in sacks of 100 lbs. net each. Leadite tested and used for over 50 years • Leadite Joints improve with age.

Be sure it is Leadite and accept no imitations

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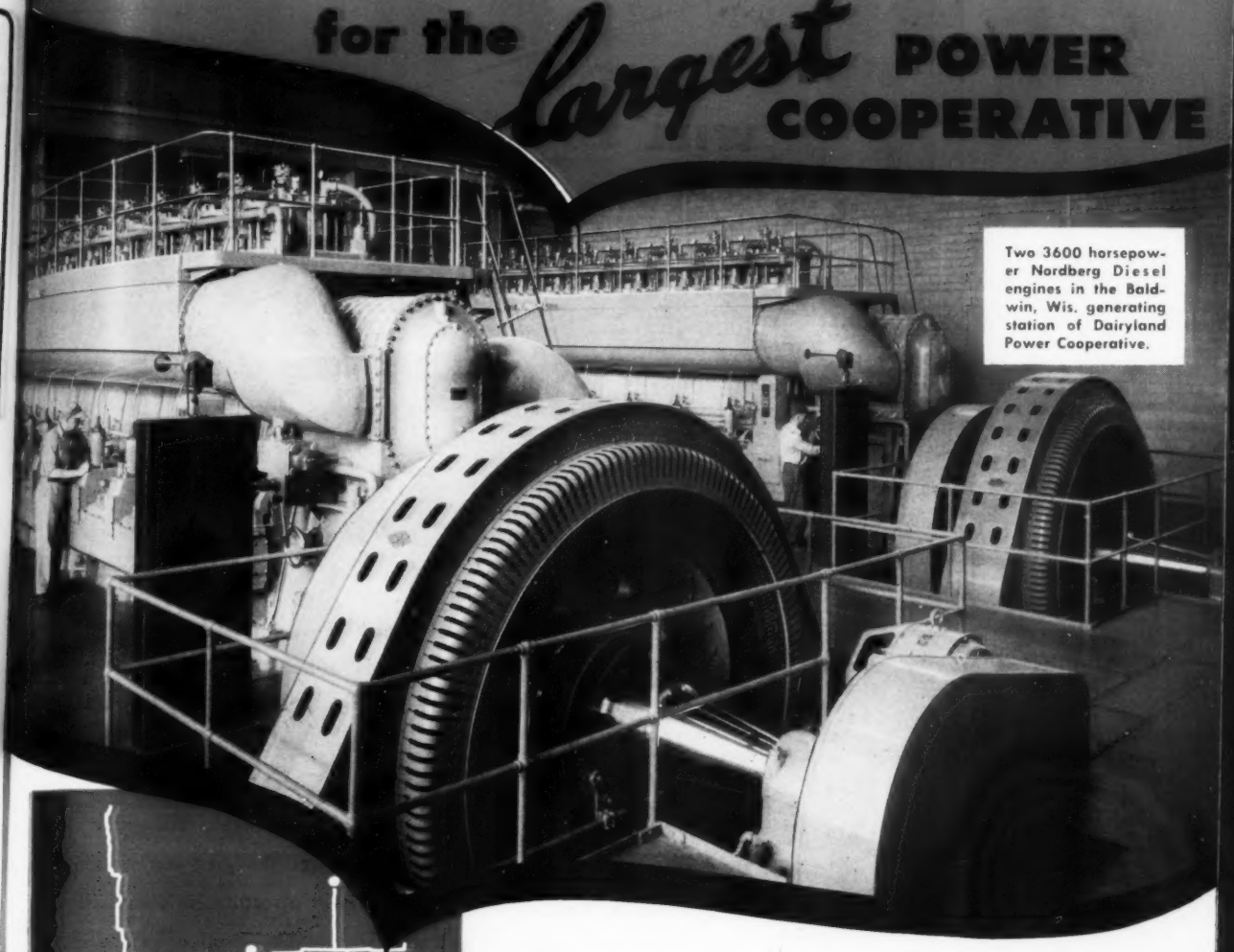
Girard Trust Co. Bldg., Philadelphia 2, Pa.

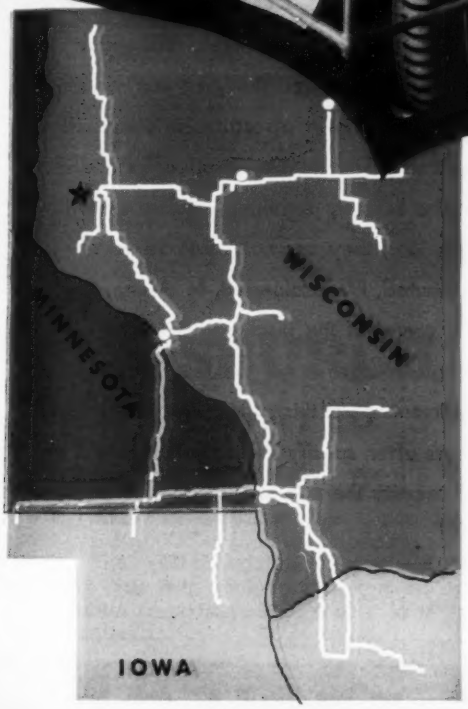
No Caulking

NORDBERG DIESEL POWER

for the *largest* POWER COOPERATIVE



Two 3600 horsepower Nordberg Diesel engines in the Baldwin, Wis. generating station of Dairyland Power Cooperative.



★ *Baldwin Plant*

THE Dairyland Power Cooperative furnishes electric service to twenty-five distribution cooperatives having more than 50,000 members located in the rich agricultural section of the Upper Mississippi Valley. Among the five generating stations which provide power to energize over 1,800 miles of main transmission line is the Baldwin, Wisconsin station where two Nordberg Diesels with a total of 7,200 horsepower are installed. These engines are used to carry peak loads, a type of service for which the Diesel is ideally adapted. Diesel units can be put on the line and under load quickly and when shut down there is no stand-by expense. Under the above peaking load operation, the Nordberg Diesels have averaged 14.31 K.W. hours per gallon of fuel since the engines have been placed in service.

If you are contemplating additional power equipment investigate the merits of Nordberg Diesel power.

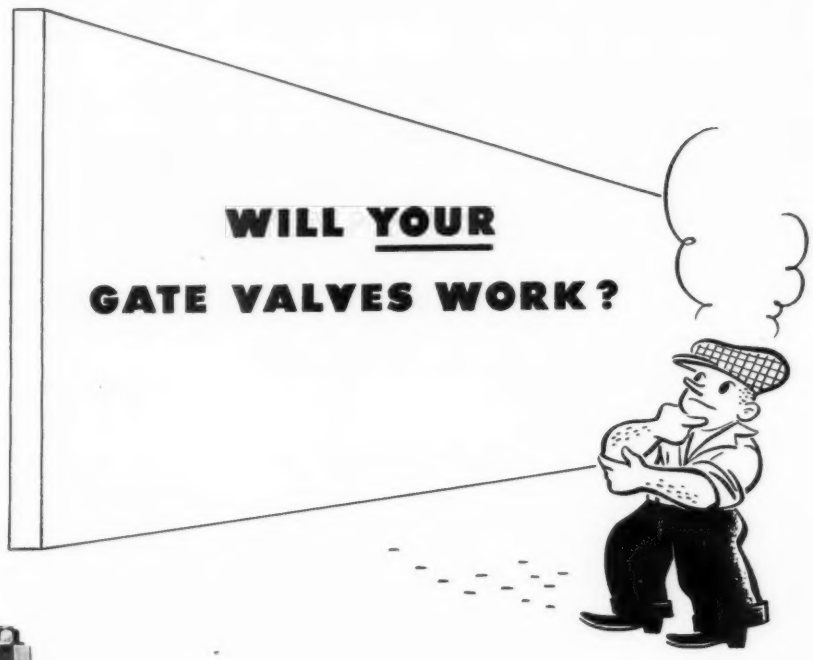
NORDBERG MFG. CO., MILWAUKEE 7, WIS.

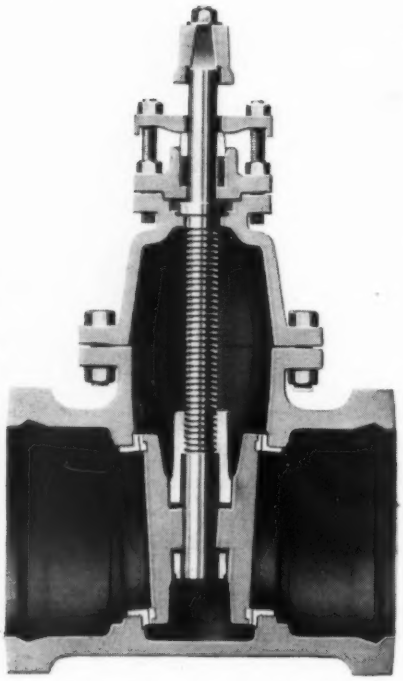
NORDBERG MACHINERY

NORDBERG

DIESEL ENGINES

NORDBERG MACHINERY





High-strength cast iron. • Fully bronze-mounted. • Rigidly inspected, tested to 300 lbs. hydrostatic pressure. • Conforming to A. W. W. A. specifications. • Sizes from 2″ to 30″.

Deep buried in the earth, a gate valve must work when needed—or it is not worthy of the name. For there can come a time in the life of any community when public safety hinges on this mechanism alone.

The R. D. Wood Gate Valve has earned high confidence, having proved itself over a span of many years, and under conditions of every sort. It is so designed that practically nothing *can* go wrong. Just 3 internal parts—a spreader and two discs. No pockets to collect sediment. The discs move clear of the seats before being lifted into the bonnet, permitting unobstructed flow. Turning freely on the trunnions, they are not liable to wear at any *one* place—wear is distributed, life prolonged. In closing, the spreader action is *at the center* of the discs, seating them tight and even, and preventing leakage.

One of the fine compliments paid this gate valve is the fact that waterworks engineers often *specify* it—as an extra margin of safety. Give your community the *plus* protection of R. D. Wood Gate Valves.

R. D. WOOD COMPANY

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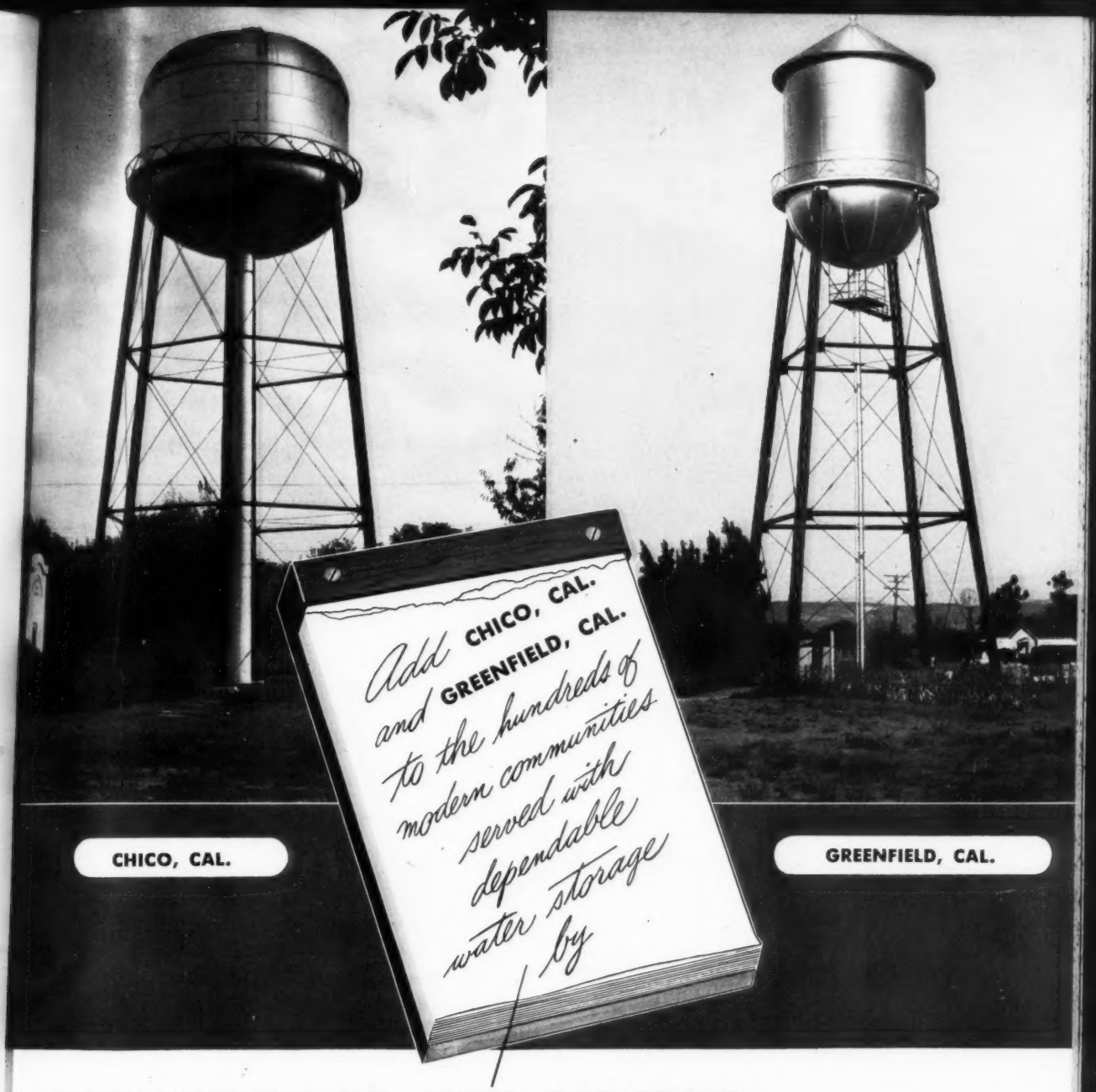
Manufacturers of Mathews Hydrants and "Sand-Spun" Pipe (Centrifugally Cast in Sand Molds)


Add CHICO, CAL. and GREENFIELD, CAL. to the hundreds of modern communities served with dependable water storage by
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Typical of the country-wide activity in municipal water storage improvements are these West Coast Pittsburgh-Des Moines Elevated Steel Tank installations. The Chico tank is of Double-ellipsoidal design, 300,000 gallons in capacity, at a height of 120 ft. to overflow. The 100,000-gallon Greenfield tank is our Hemispherical Bottom type with cone roof; height 75 ft. to bottom. *Let us discuss your own requirements, in any tank type or capacity.* Write for a consultation.

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The right survey plan comes first

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The plan sets the pattern for the entire survey. It determines the procedures to be followed—and the scale and contour interval to which the various maps are to be flown and constructed. It is highly important in determining a practical and economical approach to any survey problem.

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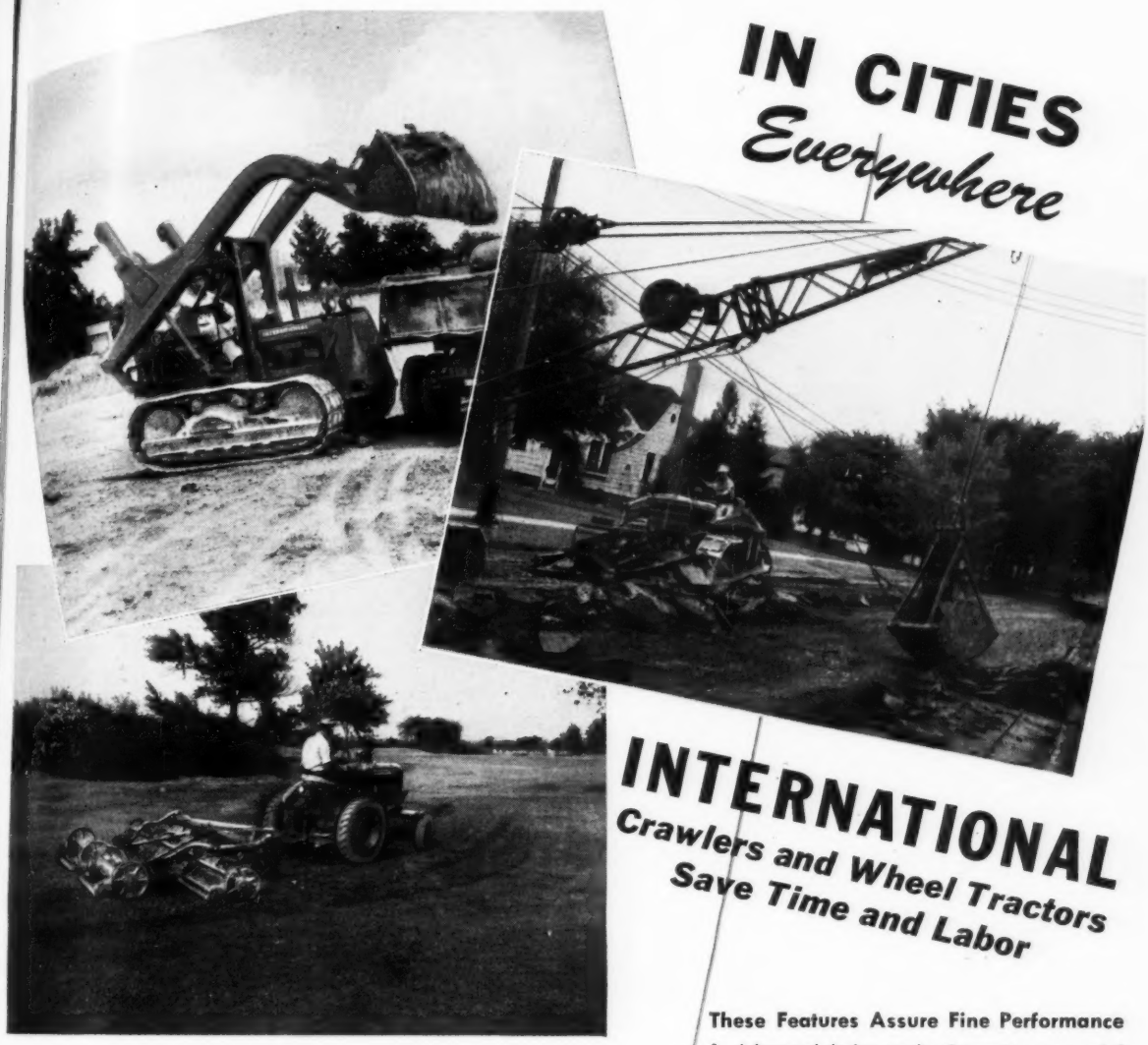

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Crawlers and Wheel Tractors Save Time and Labor

■ International tractors build recreation fields, repair and maintain streets, roads and alleys—and mow the grass in parks and on golf fairways.

One-man operation makes the use of these tractors economical, for they replace many hand laborers on jobs like these. Work is speeded—time is saved—costs are cut to bedrock.

Ask the International Industrial Power Distributor in or near your city to give you specifications and other information on International tractors, power units and the matched equipment used with them.

These Features Assure Fine Performance

1. Advanced design combustion systems mean dependable engine performance and economical use of fuel.
2. Full-pressure lubrication guards all moving parts and assures long useful life of engines.
3. Variable fly-ball governors maintain selected speed and prevent abuse of the tractors or engines.
4. Engines have replaceable cylinder sleeves for long-lived service and quick, inexpensive replacement when worn by long use.
5. International have dependable, convenient controls for ease of handling and maneuvering.
6. Rugged construction in keeping with the work the tractors are designed to do. This spells durability but not excessive dead-weight.

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FOR MUNICIPALITIES

HAND storage batteries are heavy-duty batteries provided with heavy, hand-pasted tank-formed plates, heavy glass mats, acid and heat resisting micro-porous rubber separators, splash decks and genuine hard rubber containers. Built for use in Police Radio cars, Sanitation trucks, snow plows, sweepers, emergency trucks, ambulances, and fire apparatus.

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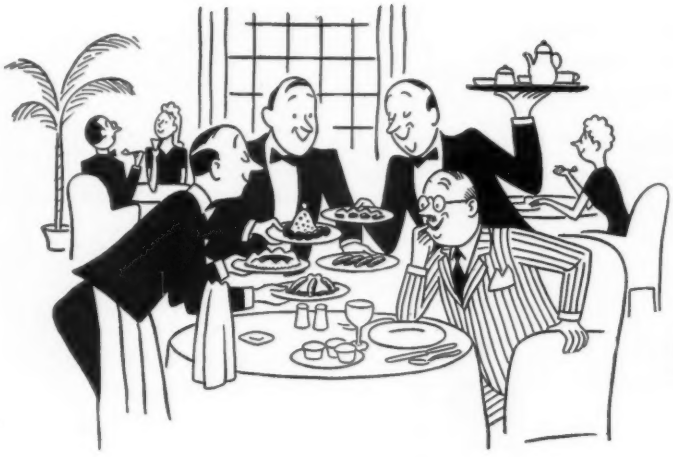

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In addition to superb food, you'll find large, oh-so-comfortable rooms . . . efficient, friendly service . . . the sincere warmth of Statler hospitality.

At moderate rates.

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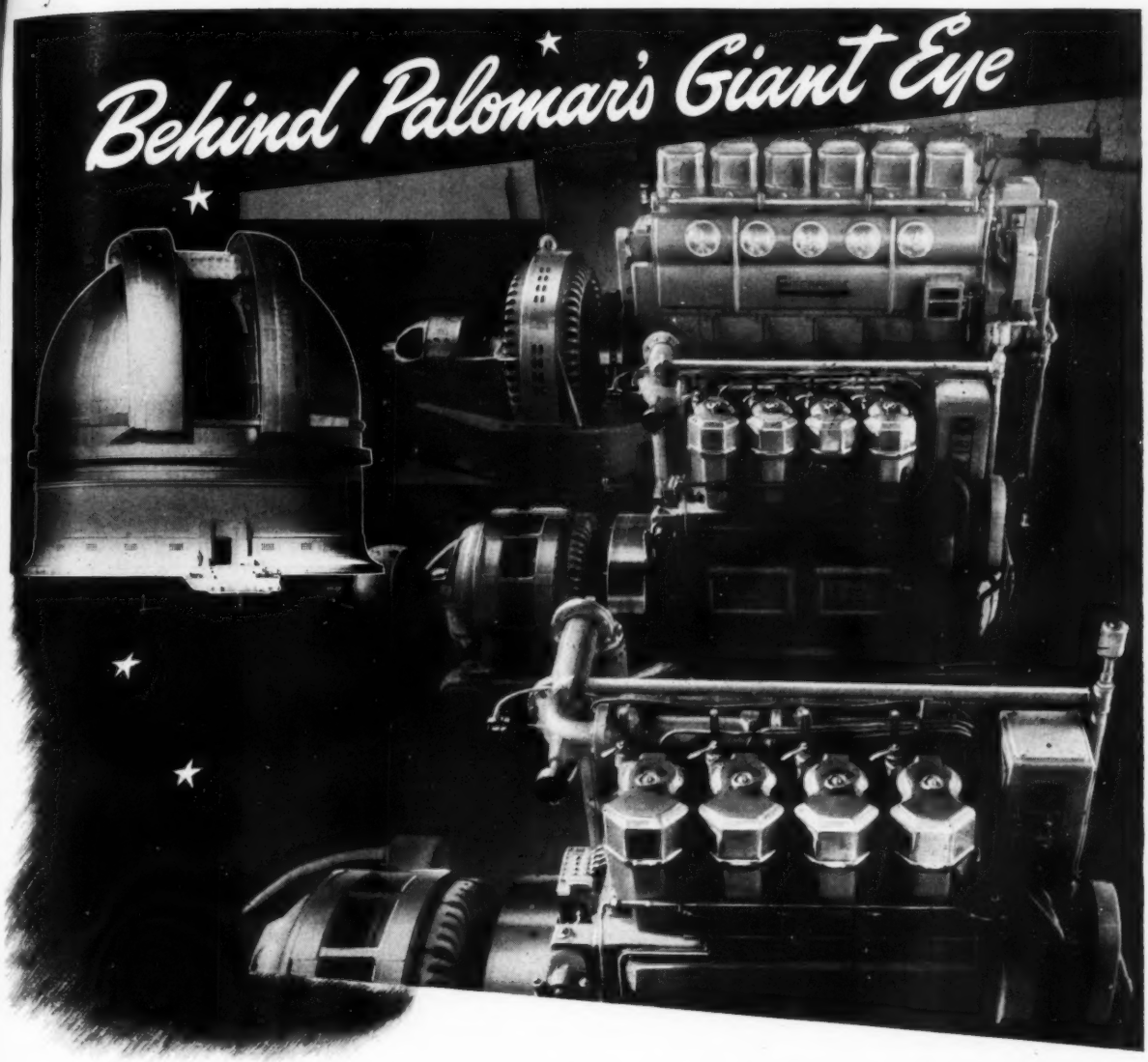

Stellar power performance by ENTERPRISE

ENTERPRISE *Diesels*

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NEW ORLEANS

Sometime during the coming months the big eye perched on Palomar Mountain will open for its first glimpse into space. This mammoth 200 inch telescope—the largest in the world—depends on three ENTERPRISE Diesel-driven generating units for its complete power requirements. Over 300 miles of wiring inside Palomar's dome carry current to the delicate rotating mechanism, scores of robot controls, intricate lighting, pumping, clock and air-conditioning systems.

Where power failure at any time would stall and impair critical observations, much study of power applications was made by Palomar's great engineers and scientists. The selection of ENTERPRISE Diesels is indeed high testimony of the dependability and reliability of this power for such an exacting assignment.

You too will find in ENTERPRISE Diesels a flexibility of application to meet your special power requirements. We invite your investigation of the wide range of ENTERPRISE Models. Normally-aspirated or turbocharged up to 1800 HP per unit.

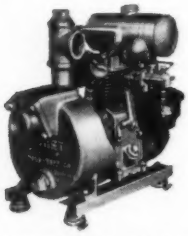
DIESEL ENGINES • PROCESS MACHINERY • OIL BURNERS • HEAVY MACHINERY

SEPTIC TANK CLEANING

Quick – Easy – Profitable

"HANDY" PUMP

A tiny pump weighing only 27 lbs., remarkable for performance. Fitted with pipe or common garden hose, this pump will lift up to 25 ft. Delivers 8 GPM at 40 lbs. pressure. Electric motor driven – self-priming. An extremely handy, dependable and trouble-free pump for all kinds of pumping jobs.



"MIDGET" PUMP

The ideal, lightweight, self-priming pump. Easily handled – weighs only 60 lbs. Will pump 3000 GPH at 20 ft. head, 5 ft. suction lift. Rapid automatic priming. Husky – trouble free – non-clogging. Whatever your pumping requirements may be up to 125,000 GPH there is a Gorman-Rupp Blue pump to do the job quicker and better.

WITH AN O.S.C. ON THE JOB

The New Odorless Sanitary Cleaner makes the Sanitary Service Operator's job an easy, pleasant and profitable one. Compare the following performance with that of old fashioned, disagreeable and unsanitary methods:

Septic Tanks of 500 gal. size cleaned in 15 minutes; 1000 gal. size in 20 minutes. A 25,000 gal. septic tank was actually cleaned in just 10 hours. Efficient? Yes, but also odorless and sanitary. No open tanks, diaphragm hand pumps, shovels or makeshift equipment. Approved by public health officials.

The O. S. C. is a modern apparatus especially engineered for cleaning septic tanks, vaults and cisterns. It can also be used for emergency fire fighting, sprinkling or dewatering flooded basements. It is equipped with a powerful Gorman-Rupp Centrifugal sewage pump of self-priming design and is shipped ready to mount on standard truck chassis of 158 to 161 inches.

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MANSFIELD • OHIO
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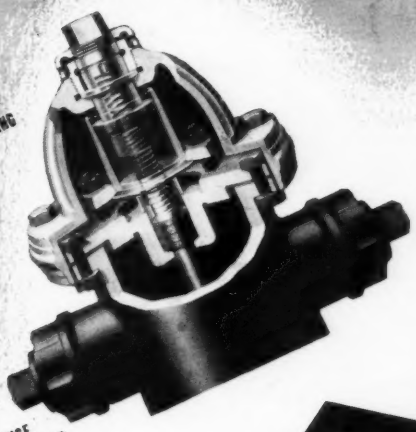
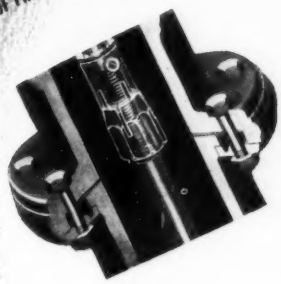
FIRE HYDRANT

MUELLER SELF-OILING TOP
ELIMINATES PERIODIC OILING

MUELLER SAFETY FLANGE
COST OF PARTS LESS THAN $8.00





MUELLER

Means Most!
since 1857

A hydrant in the community is a symbol of protection much in the same way the MUELLER trademark imprinted on that hydrant stands for protected quality. Every item bearing this trademark has been thoroughly engineered from actual field experience, designed for the needs of operating conditions and precision-built to insure superior "on the job" performance. When you specify MUELLER, the product is backed by 90 years experience and a full warranty!

DEPENDABLE SINCE 1857 FULLY WARRANTED
OUR 90th YEAR

MUELLER CO.

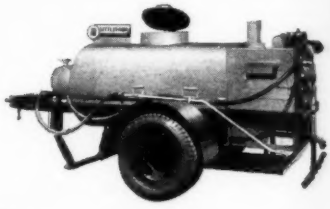
FACTORY: *Chattanooga, Tenn.* MAIN OFFICE AND FACTORY: *Decatur, Ill.*
OTHER FACTORIES: *Los Angeles, Cal.* • • • • *Sarnia, Ont. Canada*

XUM

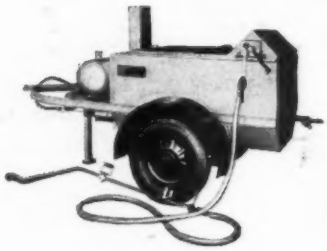
A Patch in Time Saves Nine . . .

USE LITTLEFORD FOR ROAD REPAIRS

Holes in black top are as inevitable as winter, and the best and cheapest way is to get on them quickly with the finest repair equipment anywhere available — Littleford. Put Littleford's Trail-O-Roller on patch work and the holes will soon disappear. For this compact little number is motorized and portable, converts from rolling to traveling, or back, in two minutes; trails as fast as you drive a truck; compaction as great as five ton tandem! *There's* efficiency! Combine that with Littleford heating Kettle and 101 Utility Spray Tank, and you're ready for the toughest road job that winter can throw at anybody!



Littleford 101 Utility Spray Tank is combination of three units: Spray bar for spraying, hand spray for patch work, pouring pot outlet for filling cracks.



Littleford 84-HD is fastest heating kettle made; double heat circulation and screened reservoir. These patented features give fast, efficient, economical operation.

LITTLEFORD

LITTLEFORD BROS., Inc.

500 E. PEARL ST., CINCINNATI 2, OHIO

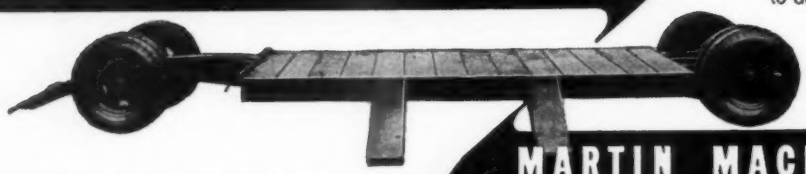
MARTIN CARRYHAUL TRAILERS

TRADE MARK REGISTERED

MARTIN CARRYHAUL TRAILERS "Make Hauling A Pleasure!"

Ease of loading, dependability and economical operation are three Martin CARRYHAUL Trailer characteristics which make them the leaders in the field.

Regardless of your hauling job, there's a proper size Martin CARRYHAUL Trailer to do it for you safely and economically.



Your "CATERPILLAR" Dealer is your MARTIN Dealer. See him for your trailer needs.

MARTIN MACHINE COMPANY

KEWANEE, ILLINOIS

The "Quinn Standard"

FOR CONCRETE PIPE

The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 30 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms and Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost.

Quinn Heavy Duty Pipe Forms

for making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for any diameter pipe from 12 to 84 inches—tongue and groove or bell end pipe—any length.

WRITE TODAY

Complete information, prices and estimates sent on request. Also manufacturers of Quinn Concrete Pipe Machines.

QUINN WIRE & IRON WORKS 1623 12th ST. BOONE, IA.

"GUNITE" CONCRETE

(Since 1915)

SPECIALISTS IN CEMENT GUN WORK

RESERVOIR LININGS (NEW AND OLD) • CONCRETE AND MASONRY REPAIRS • STEEL ENCASEMENT • FIREPROOFING • STEEL COAL BUNKER, STACK, HOPPER, AND PLATE LINING • SEWER LINING AND REPAIRING • CANAL, DITCH, AND DRAIN LINING.

GUNITE CONCRETE & CONST. CO.

1301 Woodswether Road **Kansas City 6, Missouri**

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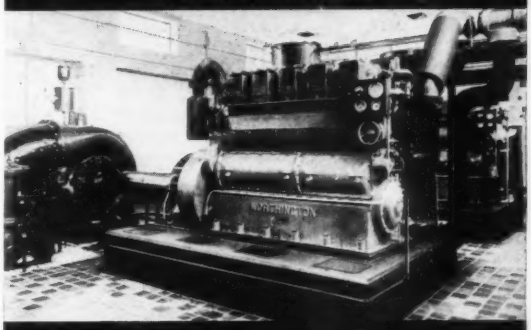
Branch Offices: DENVER • DALLAS • NEW ORLEANS

Look to the LEADER FOR LOW-COST POWER

Tatlman's Island, New York City

Sioux Falls, South Dakota

Greensboro, North Carolina



Gary, Indiana

As your municipality prepares to complete war-delayed plans for modernizing sewage treatment, consider the advantages Worthington offers you.

In providing 60 heavy-duty gas engines totaling over 17,000 hp to 30 communities between 1934 and 1941, Worthington kept in step with all the developments in modern sewage treatment plants. While its 500 hp installed in 1934 was growing to 7200 hp installed in 1941, Worthington not only advanced in design leadership but also built up invaluable experience in fitting the right engine to specific conditions.

Now, at the beginning of the "new era" in sewage treatment development, Worthington offers a complete line of both spark ignition gas engines and dual fuel Diesel engines in sizes ranging from 225 hp to 1645 hp in single units.

That Worthington leads today, as in the past, is evidenced by a recent contract to supply the City of Boston with 5 engines totaling approximately 3000 hp, in both types of engines. For further proof that *there's more worth in Worthington*, write for literature. *Worthington Pump and Machinery Corporation, Engine Division, Buffalo, New York.*

WORTHINGTON

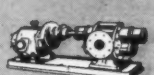
E7-7

YOUR PARTNER IN POWER PROGRESS

Diesel engines, 150 to 3,520 hp . . . gas engines, 175 to 3,290 hp . . . dual fuel Diesel engines, 225 to 3,290 hp.

WORTHINGTON-BUILT AUXILIARIES

Air King Compressors



Oil Transfer Pumps

Cooling Water Circulating Pumps

Evaporative Type Engine Water Cooler

This *Giant* Morris Pump...

HAS OPERATED FOR 17 YEARS

...and still going strong!

In city after city . . . in one installation after another . . . municipal engineers prefer Morris Pumps for economy . . . easy maintenance . . . and long term service.

In Hartford, Conn., Morris Pumps were installed in one station after another . . . and after years of service *are still going strong.*

AT HARTFORD, CONN.

1. The South Meadows Drainage Pumping Station, constructed in 1930, pumps storm water from a 1,000-acre tract. It uses four 36" volute type screw impeller Morris Pumps (as illustrated). Each pump has a capacity of 30,000 GPM at a 20' head . . . and uses a 225 HP synchronous motor. **These Morris Pumps have been in continual service for 17 years.**

2. The Avon Street Pumping Station built in 1938 as part of the intercepting sewer system for the Hartford Metropolitan Area, is fully automatic. As a lift station, it uses two 12" x 10" Morris sewage pumps, each with a capacity of 1,800 GPM at a 13' head and each driven by a 10 HP variable speed motor. **These Morris Pumps have been in continual service for 9 years.**

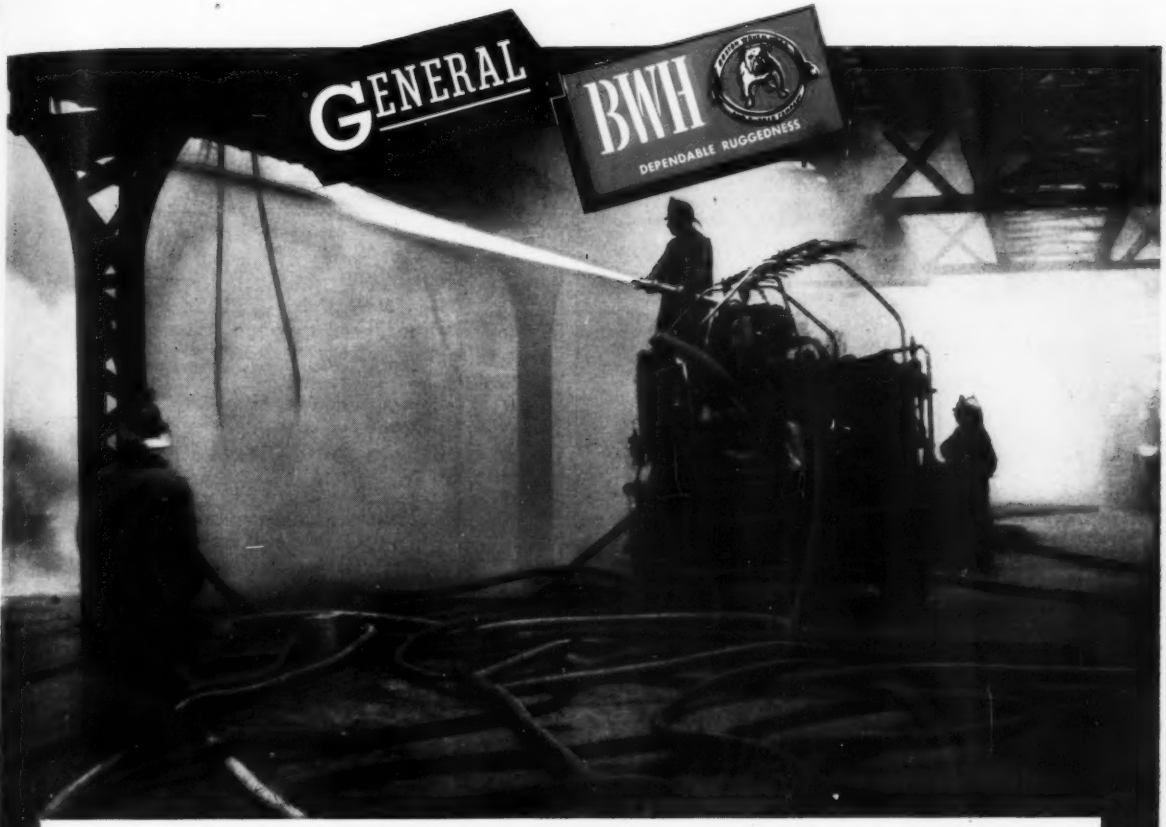
3. The Potter Street Lift Station was constructed in 1939 to lift sewage from one trunk sewer to another. It is using two Morris 14" x 12" sewage pumps with fully automatic control. Their capacity is 3,000 GPM each at a 10' head, efficiently driven by 15 HP motors. **These Morris Pumps have been in continual service for 8 years.**

● The Morris Pumps in these three stations prove once again what Morris Engineers have long believed to be true: a pump is never obsolete so long as it operates efficiently, economically and dependably.

Write today for specifications and operation data on pumps to fit your particular needs. Our recommendations are based on 83 years of pump-building experience.

MORRIS MACHINE WORKS • BALDWINSVILLE, N. Y.
Sales Offices in Principal Cities

MORRIS *Centrifugal Pumps*



WHEN SPEED IS ESSENTIAL
USE BWH HOSE

When fires rage and every minute counts, fire fighters need hose that is easy to handle and has dependable stamina. That's one reason why so many municipalities call on *General* for BWH Fire Hose.

A fine example of BWH Manufacturing is Boston Fire Jacket Hose. Highly flexible, this hose has the stamina that takes real punishment. The strong rubber tube is protected by a circular woven cotton jacket, with individual threads 30% heavier than those used in many other types of hose. No wonder this BWH Hose is the choice of fire fighters who want the best.

Boston Fire Jacket, as well as all types of Fire Hose, is available to you through *General's* conveniently located 21 branch offices and warehouses, plus a nation-wide network of independent distributors. There's one near you. Call or write him today.

Boston Fire Jacket Hose

NOW! *Distributors of famous*
BOSTON WOVEN HOSE AND RUBBER CO.
Municipal Fire Hose

THE GENERAL DETROIT CORP.
Manufacturers of Fire Extinguishers
Motor Fire Apparatus and Allied Equipment
2270 E. JEFFERSON • DETROIT 7, MICHIGAN
NEW YORK • PHILADELPHIA • ATLANTA • CHICAGO • DALLAS
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ETNYRE
Street Flushers
"THE MACHINE OF A DOZEN USES"

KEEP YOUR STREETS "HEALTHY"

During the hot, dusty months of midsummer an Etnyre Sanitary Street Flusher will keep your streets clean, cool and healthful by reducing bacterial count and disease hazard, laying dust and cooling hot pavements. Streets up to 42 feet wide cleaned in ONE TRIP—even under parked cars. See your Etnyre dealer for full information or write us today!

E. D. ETNYRE & CO., Oregon, Illinois

Cast Iron Pipe
PLAIN CAST OR SPUN CENTRIFUGAL

Cast Iron Pipe and Special Castings, Bell and Spigot, Flange, Flexible Joint, Culvert, Milled and Plain End Tubes, Cylinders, Flanged and Bell and Spigot Fittings, High Pressure Fire Service Pipe, Warren Short Body Specials, Threaded End Pipe.

Size 2 to 84-inch

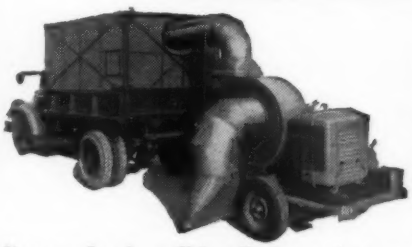
Pipe manufactured in accordance with standard specifications adopted and approved by water works associations and engineers.

Warren Foundry & Pipe Corp.
11 Broadway, New York City

Warren Pipe Co. of Massachusetts
75 Federal Street, Boston, Mass.

Attention: CITY MANAGERS!

Save Time . . .
Men . . . Money
. . . and DO A
BETTER JOB



Use the VACUUM LOADER

Vacuum Loader will handle leaves (wet or dry), papers, small sticks, bits of glass, nails, etc. Also cotton, grain, etc.
This is the answer to your street sweeping problem. Loads all your curb debris and in addition takes care of your catch-basins before they fill up.

• *See your equipment dealer and if he does not handle it, write to* •

Leaf Loader Div., AMERICAN STRUCTURAL STEEL and TANK CO.

M. A. ELLIOTTE, *Sales Manager*
928 VIRGINIA PARK **DETROIT 2, MICHIGAN**

Do next year's weeding NOW!

DOLGE SS WEED-KILLER, applied this Fall, will destroy the seeds of next year's weed crop and greatly simplify your 1948 ground maintenance program. Used in economical solution **where no vegetation whatever is desired,** it does a complete, 3-way job —kills foliage, works down to finish off roots, sterilizes the soil.

DOLGE E. W. T. SELECTIVE WEED-KILLER will not harm most grasses but is death to a wide variety of unwanted plant life. In autumn, the sap of hardy perennials such as poison ivy flows downward and E.W.T. is quickly absorbed, effectively destroying roots and runners.

Write for Dolge literature which details specific methods and proper solution strengths for dealing with many different species of plant pests. **"Get to the root" of your weed problem NOW!**

THE C. B. DOLGE CO., WESTPORT CONNECTICUT

THE 3 BEST IDENTIFICATION UNITS MONEY CAN BUY

FOR DWELLINGS - APARTMENT HOUSES OFFICES AND BUILDINGS

PERMA - GLOW The number that glows in the dark.
PLASTIC BRONZE To match brass and bronze hardware.
BLACK PLASTIC Neat . Sturdy . Modern

FOR SAMPLES AND LITERATURE WRITE

Reflecto Letters, Inc.
411 EAST 101st ST. NEW YORK 29, N. Y.
Specialists in House Numbers

The trademark "Realock" is new—but the brands of woven wire fence it identifies have a long standing reputation for quality in the areas they serve.

The Colorado Fuel & Iron Corporation and its subsidiaries will continue to manufacture and distribute Chain Link Fence. However, production and sales facilities are being standardized so that regardless of where the order originates, or where (in the Continental U. S. A.) the fence is to be installed, we can render prompt, dependable service.

FREE ESTIMATES

We will be happy to measure your property, work out details to secure proper protection, and submit estimates for fence material ready for erection or covering complete installation by our trained crews. For free catalog and further particulars, write to our nearest office.

REALOCK CHAIN LINK FENCE

CF&I Realock CHAIN LINK FENCE

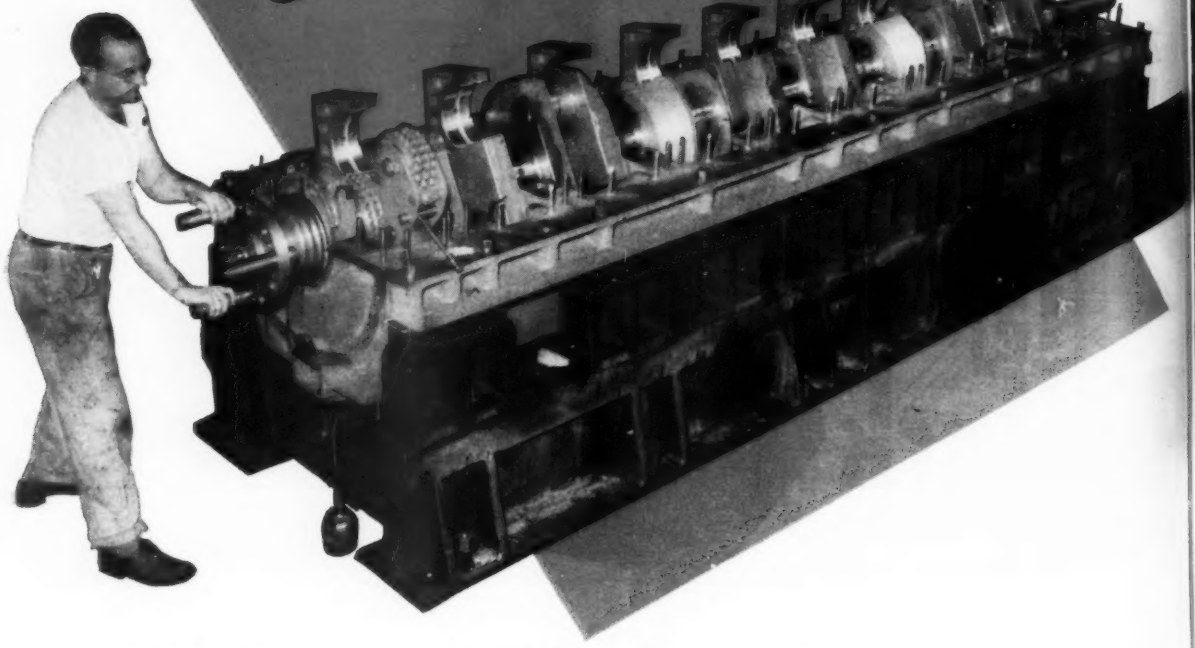
Wickwire Spencer Steel
361 Delaware Avenue
Buffalo 2, N. Y.

The Colorado Fuel & Iron Corp.
Continental Oil Building
Denver 2, Colo.

The California Wire Cloth Corp.
1001 22nd Avenue
Oakland 6, Calif.

Branches and Distributors in Principal Cities Everywhere

HERE ARE 5500 POUNDS OF *Precision*

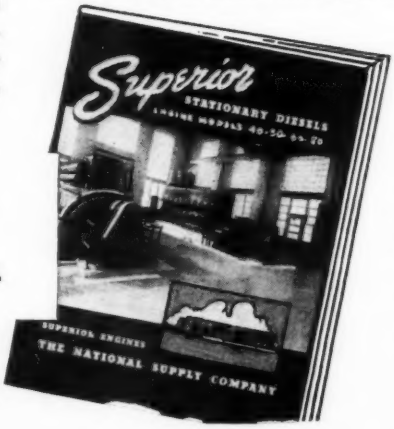


SUPERIOR Diesel Engines are built with watch-like precision. This extreme accuracy is reflected in the ability of Superior Diesels to provide long, uninterrupted service. And it enables many users to rely on just one of these engines for their *entire power supply*.

The big, husky crankshaft shown above offers a good illustration of the care used in building Superior Diesels. It is forged from carefully selected alloy steel that must meet rigid specifications established by Superior's own metallurgical engineers. It is machined to such extreme accuracy, that when a 5500 pound crankshaft is placed in the precision machined bearings of the engine bed, one man can revolve it by hand. As a result they are able to stand up under the toughest kind of service. Dramatic evidence that proves the perfect precision and workmanship that marks every part of a Superior Diesel Engine.

Superior has spent nearly 60 years in developing the skill and know-how needed to build fine engines. Consequently, there is an ever growing demand for Superior Diesels.

For all the facts about Superior Diesel Engines, write for bulletin No. 4704. It's packed with facts and illustrations which will prove that a Superior is your best buy.



Send for this Booklet

A new 28 page booklet, "Superior Stationary Diesel Engines" is just off the press. It's packed with facts that tell *how*, *when* and *why* Superior Diesel Engines can help you build profits. Write for your free copy today.

Superior DIESEL

SUPERIOR ENGINES DIVISION OF
THE NATIONAL SUPPLY COMPANY
Plant and General Sales Office: Springfield, Ohio

HOW NEW KB INTERNATIONALS ARE *Masterfully Specialized to their Jobs*

New KB Model Internationals are the finest values in International Truck history. And International values are so outstanding that for 16 years more heavy-duty Internationals have served American commerce and industry than any other make.

But rugged quality is only one reason for International leadership. Another is International's masterful ability to *specialize* trucks to their jobs.

There are 15 basic KB Internationals. Gross weight ratings range from 4,400 to 35,100 pounds. Ten different engines are used. Axles, transmissions and tandems are available for every requirement.

International *specializes* its 15 basic KB Models into more than 1,000 different type trucks—a result of 40 years experience, engineering skill and matchless facilities. *That's fitting the truck to the job!*

Now add this: International can accurately tell every operator just what his maximum loads should be in terms of the exact conditions under which his trucks operate—an exclusive International service that enables the operator to get the most in operating economy, low maintenance costs, and long, trouble-free performance.

For details of new KB Internationals, *expertly specialized,* see your International Dealer or Branch.

Motor Truck Division
INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue Chicago 1, Illinois

40TH ANNIVERSARY OF INTERNATIONAL TRUCKS
1907-1947—Forty Years of International Truck Service to Industry, Commerce and Agriculture

INTERNATIONAL

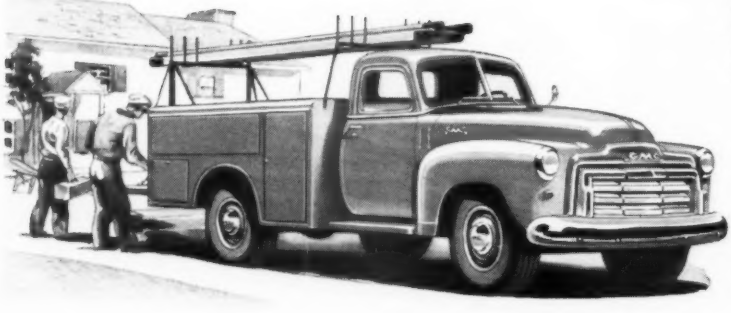
INTERNATIONAL *Trucks*

Announcing The New IMPROVED / WAR-PROVED GMCs

THERE'S A
Better Looking
Better Riding
Better Built
GMC FOR YOUR JOB

New light and medium duty GMCs bring truck styling, comfort, safety and stamina to a new all-time high. All-steel cabs are 3¾ inches longer and 9⅝ inches wider than prewar. They have new tubular frame adjustable seats with nearly double the number of seat springs . . . new windshields that are 5½ inches wider and 2 inches higher . . . new larger doors and windows . . . new ventilation with provision for fresh air heating . . . new insulation, soundproofing and weather sealing. And these new GMCs have many improved, war-proved engine and chassis advancements. See your GMC dealer . . . now . . . and get complete details!

GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION



New GMC Pickups for public utility service are offered in 4 models of 116", 125¼" and 137" wheelbase, in capacities of ½, ¾ and 1 ton. There are also Canopy Express, Platform, Stake and Panel models, plus many other chassis types.

THE TRUCK OF VALUE

GMC TRUCKS

GASOLINE • DIESEL

GARBAGE DUMP *to Garden Spot* with the "ONE-MAN CREW"

It's an easy, economical job to transform a city dump into a garden spot with the "one-man crew" . . . an Oliver "Cletrac" crawler tractor equipped with a Drott Bull Clam.

The "one-man crew" is an ideal unit for sanitary fill work. It packs down the refuse, covers it with dirt, and levels it off, flies are controlled . . . public health is protected. The unit is also employed to dig trenches preparatory to dumping the garbage. Excavated earth is then used as a protective cover. With the tractor and bull clam, one man is the equal of a full working crew employing less modern methods.

Oliver "Cletrac" tractors are especially suited for municipal work. They are ruggedly built for long life with minimum maintenance. Their exceptional load handling ability and greater maneuverability speed job progress.

For all the facts, write The OLIVER Corporation, Industrial Division, 19300 Euclid Avenue, Cleveland 17, Ohio.

1. *"One-man crew" removes dirt from bed of old creek before garbage is dumped.*

2. *After garbage is dumped in creek bed, the "one-man crew" packs it down firmly and levels it off.*

3. *Dirt, previously removed from creek bed, is carried by unit and spread over garbage.*

Cletrac

OLIVER Cletrac SALES SERVICE

a product of

The OLIVER Corporation

FARM-TO-MARKET ROADS are *two-way* trade routes. They carry food to cities; manufactured goods to farms. Important to highway officials and engineers in the development of these vital roads is Barrett-Tarvia* road tar, a dependable and economical all-purpose paving material.

This advertisement in The Saturday Evening Post emphasizes the economic importance of country roads to all Americans, both urban and rural.

HOW BARRETT SERVES THE ROAD BUILDING INDUSTRY. Barrett Tarvia* road tar and Tarvia-lithic* bituminous concrete, which have long been favored paving materials of road officials and engineers, meet almost every requirement for dependable, low-cost road construction, maintenance and repair. Barrett also makes Wood Preservatives for guard rails and bridges, Protective Coatings for culverts and underground pipe, and Waterproofing for viaducts and tunnels. These and other Barrett basic products establish Barrett as **ONE OF AMERICA'S GREAT BASIC BUSINESSES.**

Barrett

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.

*Reg. U. S. Pat. Off.

TIP TO ROAD MEN: If any of the country roads in your territory need attention, ask the Barrett field man for suggestions He can help you.

FWD Trucks Provide Fast, Safe, Sure Transport of Heavy Machinery or Material...On or Off the Road

Hauling power shovels and other heavy machinery, huge loads of cement, bulky loads weighing 50 tons or more — those heavy-duty hauling jobs are usually entrusted to FWD four-wheel-drive trucks.

The safety and surety — the reliable pulling power of four or six driving wheels — the ability to move the load to location on or off the highway — these FWD advantages count heavily in this and other heavy-duty trucking operations.

Wherever motor truck performance must be more than usually dependable — in heavy hauling, in highway or municipal service, in utility line construction and maintenance, in oil-field operations — FWD four-wheel and six-wheel-drive trucks are rendering important service.

THE FOUR WHEEL DRIVE AUTO COMPANY
CLINTONVILLE, WISCONSIN
Canadian Factory: KITCHENER, ONTARIO

America's Foremost **FWD** *Heavy-Duty Truck*

ALL HANDS POINT TO GLENGARRIE POPLIN!

Look for this Label in Your Uniform, Utility and Work Shirts!

YOUR FIRST CHOICE in securing the highest quality uniform shirts is to choose the right fabric. Specify Glengarrie Poplin and you are sure to get the best.

Glengarrie Poplin is a fine, high-count, combed yarn shirting. It's Sanforized* to permit for minimum shrinkage and its vat dyed colors are fast to sun, water and perspiration.

It saves you money and guarantees that your shirts will still look smart after wear and washing. Demand Glengarrie Poplin for shirts that are right on the job. **Residual shrinkage less than 1%.*

THE REEVES FABRIC GROUP INCLUDES:
Reeves Army Twill • Reeveking Gabardine
Glengarrie Poplin • Marine Herringbone
Byrd Cloth • Warrior Twill • Mountain Cloth
Pima King Broadcloth

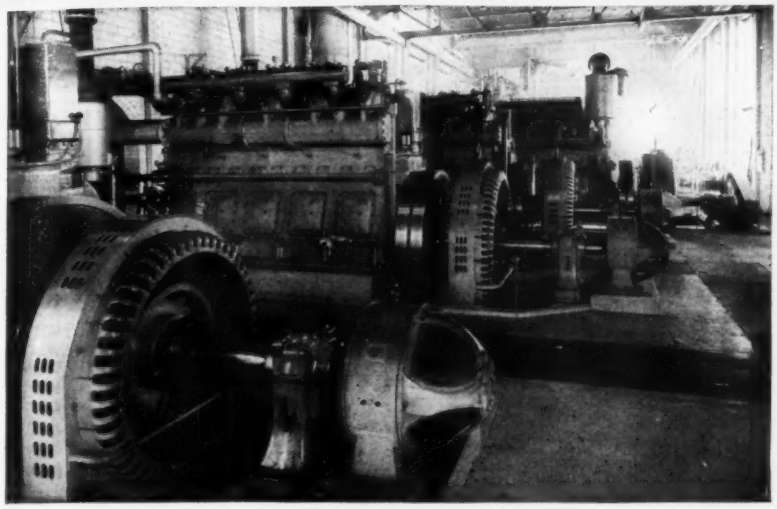
MADE OF FINE COTTONS

SPINNING WEAVING DYEING FINISHING Reeves FABRICS

REEVES BROTHERS, INC.
54 WORTH STREET, NEW YORK 13, N. Y.

"FROM COTTON TO CUTTER"

REPRESENTATIVES IN: *Akron • Atlanta • Boston • Chicago • Dallas • Los Angeles • Philadelphia • Portland, Ore. • St. Louis • Montreal • Toronto*



Four Worthington 4-cycle Diesel Generating Units now operating in the Shenandoah Valley Cooperative plant.

More Worthington Diesels for Shenandoah Valley Cooperative

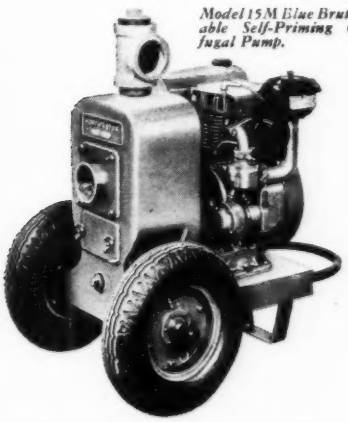
The first rural electric cooperative organization in the United States to manufacture its own current—the Shenandoah Valley Electric Cooperative, serving more than 5,200 consumers in Virginia—has a program for nearly doubling its generating capacity, and has selected Worthington equipment for the purpose.

The present sub-station and switchboard at the plant in Dayton, Virginia, will be replaced with equipment to handle about three times more voltage.

At present, the machinery that produces the electricity is driven by five Diesel engines. The present 2,300 kw generating capacity will be increased by 2,000 kw.

The original installation, in 1937, consisted of three Worthington Diesel Generator units, a 250 hp DS-3 driving a 170 kw generator, a 415 hp DS-5 driving a 285 kw generator, and a 500 hp DS-6 driving a 345 kw generator.

The load grew, and in 1939 Worthington furnished a 1,000 hp EE-8 driving a 700 kw generator. The present order calls for three 1,685 hp SEH-8 units to drive 1,180 kw generators at 360 rpm.



Model 15M Blue Brute Portable Self-Priming Centrifugal Pump.

New Portable Self-Priming Centrifugal Pump

Fast self-priming without re-circulation is the big feature of the new Blue Brute Portable Centrifugal Pumps. Most pumps of this type prime themselves by re-circulating water from the discharge side of the casing back to the impeller suction through priming ports. Blue Brute pumps have none of these troublesome devices. They prime without them.

Basically these pumps are all steel. The casings are fabricated of rust and abrasion resisting steel with smooth, streamlined internal waterways and pleasing external appearance. The impellers are cast of a hard, tough alloy iron and the casings are equipped with renewable hardened wear plates, easily replaced when they have become too badly worn. The entire unit is mounted on a rigid steel base and all sizes except the 1½"-3M rating are equipped with two pneumatic tired wheels.

Blue Brute Portable Self-Priming Centrifugal Pumps conform in all respects to the standards for this type of pump adopted by Contractors' Pump Bureau of the Associated General Contractors of America, Inc., and each unit carries an A.G.C. rating plate which certifies that the pump meets the rigid requirements that have been established. Pumps will be available in all A.G.C. ratings from 1½"-3M to 4"-40M, with larger pumps to follow later.

All pumps are equipped with air-cooled gasoline engines—single cylinder on 1½", 2" and 3" pumps and four cylinder V-type on 4" pumps.

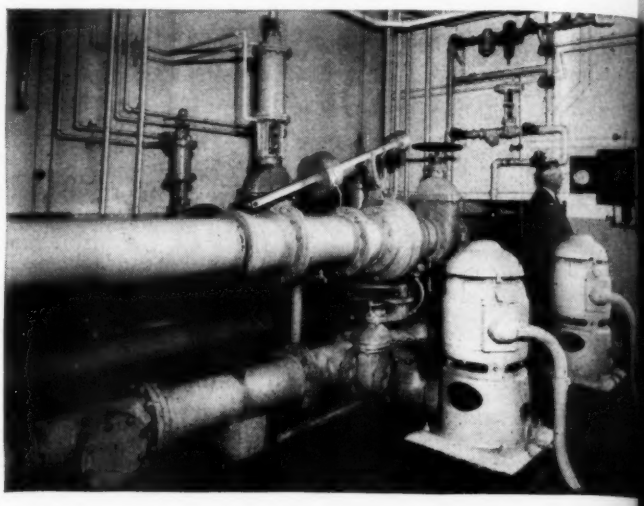
NEWS

FROM THE PUBLIC WORKS FRONT

AS REPORTED BY THE DEVELOPMENT ENGINEERS, FIELD SERVICE REPRESENTATIVES AND CUSTOMERS OF WORTHINGTON

NEWS from the public works front

Two Worthington Vertical Turbine Pumps in new filter plant at Culpeper, Va.



Culpeper Pumps with Worthingtons

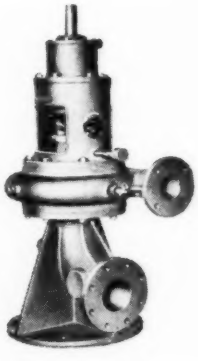
Deep well type turbine pumps furnished by Worthington carry river water to and from the new filter plant installed by the Town of Culpeper, Va.

This plant has a capacity of one million gallons per day, consisting of two one-half million gallon filter units.

The water supply is taken from Mountain Run, a stream approximately 1,000 ft. from the filter plant. A special screened intake structure in the stream permits taking all water, if necessary, during drought periods and the storing of water in the stream bed during periods when the filter plant is not in operation. A 12-in. cast-iron gravity raw water line extends from the intake to the raw water well under the ground floor of the filter building. Two raw water pumps of the deep well turbine type deliver the raw water to the coagulating or settling basins. These pumps have a capacity of 350 gpm each.

The filtered water is pumped to the distribution system and the water storage standpipe from the clear well by two deep well type turbine pumps, each having a capacity of 350 gpm. Provision has been made for the installation of additional pumps when the water demand increases.

Worthington Centrifugal Pump for pumping sewage.



New Line of Sewage Pumps Announced by Worthington

A new line of "dry pit" centrifugal sewage pumps has been introduced by Worthington. The line consists of seven sizes for each of three types, covering the complete range of requirements. Designs have been standardized for maximum interchangeability of parts.

Features of this line include the following: renewable shaft sleeve, heavy-duty ball bearings, positive grease lubrication, non-clogging impeller, and rugged casing.

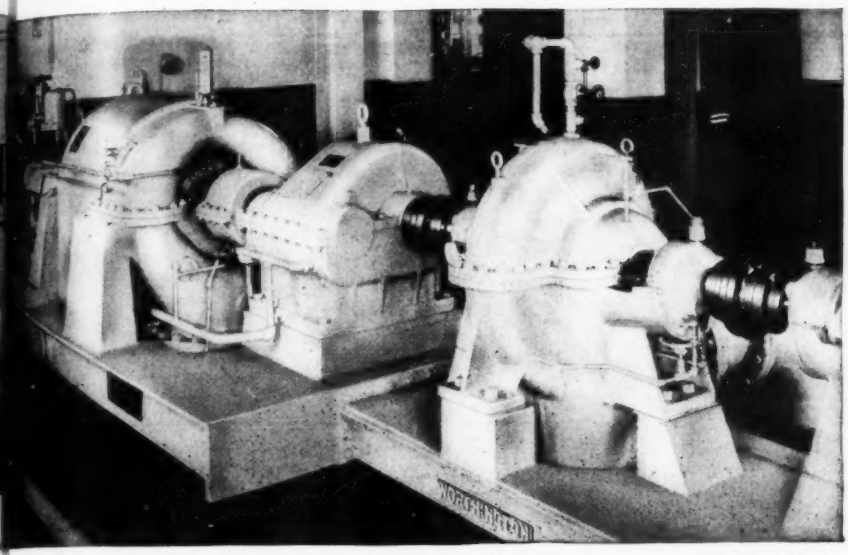
Line drawings, scale ⅜ in. to 1 in., suitable for tracing in plans, are available to consulting engineers upon request. Also descriptive bulletin W-317-B10.

Straightening Out Highway 37

6 miles of new highway are being built between Indianapolis and Bloomington to straighten out Highway 37. The photo shows two Worthington Blue Brute UMW40 Wagon Drills being driven by two 315 cu ft Blue Brute portable compressors. The contractor is John Bloomer Construction Co. Appleton, Wisc.

Worthington Pump and Machinery Corporation

Harrison, N. J.



9 mgd Worthington Turbine Centrifugal Pump at York Water Company's pumping station installed in 1946.

30 MGD is Worthington Record at York, Pa.

of the outstanding water works in the ntry is the plant of York Water Company ork, Pa., serving 22,884 connections gh 169 miles of mains. The pumping n is completely equipped with Worthn pumping units.

early pumping installation using superd steam was made in 1915—a horizontal compound crank and flywheel pumping ne designed for 8 mgd against 312 ft TDH. wo later Worthington installations were made—a horizontal cross compound crank and flywheel pumping engine rated at 5 mgd against 325 ft TDH and a turbine centrifugal unit rated at mgd against 325 ft TDH. In 1946, a second turbine centrifugal was added, rated at 9 mgd against 325 ft TDH. This unit developed a duty of 169 million ft-lb of work per 100 lb superheated steam.

Thus the present Worthington pumping equipment has an aggregate capacity of 30 mgd.

Low Pressure Turbines Power Capitol Air Conditioning

The pumps that serve the air conditioning system here are driven by Worthington-Moore Steam Turbines.

In the power plant connected with the United States Capitol and surrounding buildings Worthington-Moore steam turbines are used to drive the chilled water and condenser water pumps serving the air conditioning system.

Each of the two chilled water pump turbines is rated at 800 hp, and is equipped with separate reduction gears. The turbines operate at 4500 rpm, and the gears reduce the speed to 1450 rpm.

The condenser water pump turbines are rated at 511 hp. They operate at 4500 rpm, and gears reduce the speed to 800 rpm.

In both cases, the turbines operate on steam at 40 lb pressure and exhaust into a vacuum of 26 in.

All four turbines were installed in 1937, and they are used approximately 6 months a year, an average of 16 hours per day.

IN ONE CITY IN LESS THAN 6 MONTHS

Revenue up $6,500... Pumpage saving $4,500!

DUE TO A PROGRAM WHICH INCLUDED

METER TESTING AND REPLACEMENT

THE CITY whose figures are cited here did EVEN BETTER in the first 9 months of 1946 . . . but that is not the point. The point is — these results were gained as a result of removing and testing and repairing old water meters, or in case of those meters which could not be properly repaired, replacing them with new meters. Some of the old meters had not been removed for over 40 years . . . think of all the wasted pumpage and revenue lost in that long period of neglect!

"In 1945, we pumped approximately eleven per cent less water than in 1944, yet we had an increase in revenue from metering only, to the extent to $6,500. In addition, the power saving over the same period, due to the reduced pumping, was an additional savings of $4,500."

Excerpt from an article in a recent issue of Water Works Engineering by Mr. Carl Duy, Engineer of Water Works, Aurora, Illinois.

See your Trident Representative

if you are interested in increased revenue and lower pumping costs through a planned program of meter testing and repair — a "must" in these days of fixed water rates and increased operating costs. He will be of great help to you.

Even after years of service, old Trident Water Meters may be quickly and easily fitted with interchangeable new parts to register 90% accuracy at ¼ gpm, which should be the minimum allowable performance for ⅝ domestic meters.

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Volume LXII Number 8
AUGUST 1947
The American City

The World's Largest Fire-Alarm System

By WILLIAM HENNESSY
Electrical Engineer
Fire Alarm Telegraph Bureau
City of New York

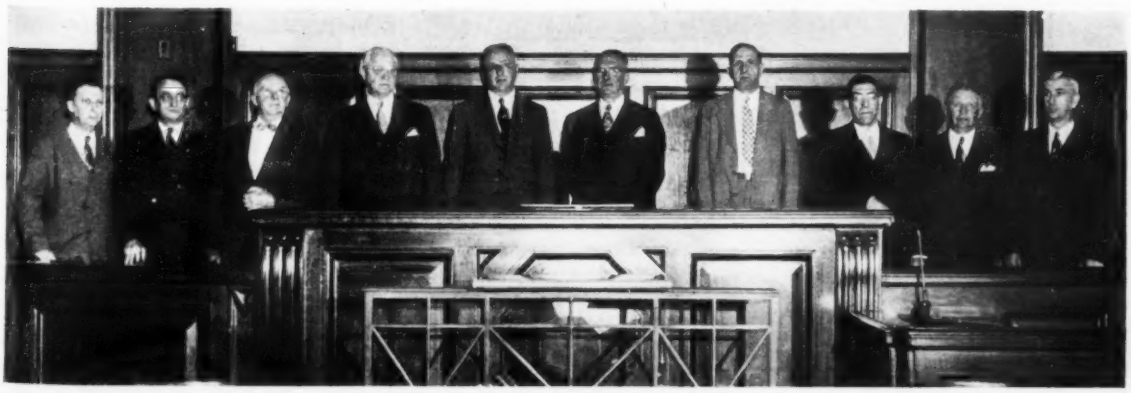
NEW YORK CITY has attempted to provide a fire-alarm telegraph system throughout its 315 square miles of territory for the receipt and transmission of all fire alarms without resorting to other communication facilities. Consequently, its fire-alarm system is the most extensive in the world, being made up of five complete and separate fire-alarm plants, each an installation of major proportions as compared with similar systems anywhere.

In addition to five wired telegraph systems, the New York City Fire Alarm Telegraph Bureau operates a two-way radio system to provide telephonic communication for a fleet of eleven fire boats and forty-six pieces of automotive equipment. This system furnishes dependable air communication throughout the Port of New York.

The city is made up of five boroughs whose boundary lines, with the exception of Brooklyn and Queens, are formed almost entirely by natural waterways, each borough being physically set off from all other boroughs. The boroughs of Brooklyn and Queens are separated mainly by an imaginary line. This geographical set-up makes an ideal separation of the boroughs and provides well-defined boundary lines for segregation of the five fire-alarm plants. Each borough has a complete fire-alarm system, consisting of a central station, external wiring facilities, alarm boxes, and alarm-receiving equipment at fire-company stations. Each is maintained and operated independently of all others, but all are coordinated for the transmission of alarms that direct the movements of fire companies in two or more boroughs, or that are of general concern to the department as a whole.

The fire-alarm plant in service in New York City is not of standard design throughout, in that it is not the

The executive staff of the Fire Alarm Telegraph Bureau, reading from left to right: Chief Dispatchers Francis Walsh, John Jordan, and Timothy Mahoney; Engineers Jerome Lanzer, Valentine Fendrich (Chief of Bureau), William Hennessy, and Anthony Neuman, and Chief Dispatchers John Lasch, John Bresnan, and Thomas Webber.



accomplishment of one year or of a decade of work, but is the result of a slow, progressive plan that has been developing for thirty years, retarded at various times by world events and a lack of financial appropriations. The description which follows is not applicable to the system as a whole. It is the general outline of the predominant part of the system.

Central Station

Four of the five central stations have been constructed and placed in operation within the past twenty-five years. These are located in fire-proof isolated structures, occupied solely for fire-alarm purposes, in park areas, at approximately the geographic center of each borough. Each is equipped to provide for both the present and immediate-future fire-alarm needs of the borough it serves, and each is sufficiently large for the extension of equipment to meet the ultimate population and building development needs.

The fifth central office was placed in operation in 1903 and cannot be enlarged because of space limitations. Plans for the erection of the new station have been prepared, and funds are available for the work.

The electrical energy necessary to operate the circuits of each central office is furnished initially by the Consolidated Edison Company. The 220-volt incoming current supply, either alternating or direct, is converted or reduced through the agency of motor generators so as to be applicable to the fire-alarm circuits at direct-current values, for which the circuits are designed to operate. Emergency power facilities consisting of large-capacity storage batteries and a diesel-engine-driven D. C. generator are also available for immediate use to insure continuity of current supply indefinitely in the event of a failure of the utility company's current supply.

External Plant

The external plant providing the conductors for the fire-alarm circuits consists of underground multiconductor lead-covered cables and open-wire construction in the outlying sections. The underground cables are extended from the central office in electrical duct lines built by the city and connected with the low-tension electrical subways of the New York Telephone Company. These cables are then continued in the ducts of the Telephone Company and are brought above the ground at fire-alarm posts or buildings through subsidiary pipes installed, at the expense of the city, from the nearest available manhole.

Underground Cables

The underground-cable plant is a combination of feeder and distributor cables. Feeders and distributors are separate cables, the conductors of each contained under different cable sheaths. Feeder cables, extended from the central office, are multiconductor, number 16 copper, rubber insulated, and lead covered, varying and diminishing in size from eighty conductors at the central office to eight conductors at the extreme or final terminal. These conductors are not brought out of the cable sheath except at the point at which the conductor terminates. An eighty-conductor cable leaving the central office will diminish in size in multiples of ten or more conductors, depending upon the number of terminal points in the complete cable run. Usually the number of terminal points is eight. Feeder cables are designated positive and negative, the positive sides of circuits routed in positive feeders, and the negative sides of circuits routed in negative feeders. Distributor cables are also multiconductor and of are the same composition as the feeder cables. They originate at feeder cable terminals and extend between terminals of feeder cables of opposite polarity. Distributor cables are routed through fire-alarm posts or buildings provided with alarm service. The total length of underground fire-alarm cables installed is 1,480 miles, consisting of 22.039 miles of conductor.

Aerial Construction

In sections where underground electrical conduits do not exist, and where it is not economical for the utility companies or the city to build them, the alarm circuits are attached to the pole lines of utility companies. Where there is a concentrated load of circuits, they are usually carried in multiconductor cables of the same compositon as those installed underground. In a limited number of locations a loom cable has been installed on poles in place of lead-covered cable, with satisfactory results. Where only one or a few circuits occupy the same pole line, they are usually carried on single num-

FIRE STATISTICS PER SQUARE MILE OF EACH BOROUGH FOR THE YEAR 1946

Borough	Square Miles	People	Assessed Real Estate Values (Millions)	Number of Fire Fighting Units	Number of Firemen	Number of Fires	Fire Losses	Value of Losses per Fireman	Losses per Fighting Unit
Manhattan	21.93	86,250	450	6.12	133	576	$257,000	$1,920	$42,000
Bronx	40.65	36,200	61	1.50	32	188	44,000	1,375	29,000
Richmond	57.19	3,230	0.81	0.51	11	66	51,000	5,100	100,000
Brooklyn	77.67	35,900	62	1.83	39	158	58,000	1,490	32,000
Queens	117.31	12,200	25	0.87	16	71	18,000	1,130	21,000

ber 10 hard-drawn copper triple-braided line wires. Circuits that are formed of aerial conductors, however, are carried from the central office on conductors of underground feeder cables to a point as close as possible to the areas served by the circuits, so that no circuit is made up entirely of aerial conductor. Altogether, there are 1.616 miles of aerial circuit, whereas the underground-circuit mileage amounts to 9.833. The underground-circuit mileage is approximately 85% of the total circuit mileage of the system.

Box and alarm circuits are of the

4

conventional closed metallic type. Two alarm circuits, a primary and secondary, are extended to each fire-company station. Each circuit is routed from the central office on a conductor of a positive-feeder cable to a positive-terminal point, where it is cross-connected to a conductor on a distributor cable and carried to a terminal of a negative feeder, from which it is returned to the central office in a negative-feeder cable. Box circuits have only fire-alarm boxes connected to them and are for incoming signals exclusively. Alarm circuits have only gong equipment connected to them and are for the transmission of alarms from the central office to the fire-company stations. In four boroughs the majority of the box circuits are of the interlaced type. In the Borough of Manhattan, where the fire-alarm circuits are completely underground, where there are not more than ten boxes connected on a circuit, and where only non-interfering succession boxes are installed, the circuits are of the non-interlaced type. The circuit layout in this borough is ideal from the standpoint of initial cost and of maintenance. For a period of almost twenty-five years, it has given 100% service performance. The alarm circuits are generally of the non-interlaced type and have not more than four devices connected on each.

On December 31, 1946, there were 11,412 fire-alarm boxes in operation on the city streets, and 1,073 were installed in public buildings throughout the city. These boxes are connected on 646 circuits with an average of twenty boxes per circuit. Of the total of 12,485 boxes in service, approximately 9,500, or 83%, are of the non-interfering succession type. The balance are of the interfering type, which will eventually be replaced with non-interfering succession boxes.

Fire Station Company Equipment

There are 270 Fire Department buildings housing 417 units of various types, all provided with equipment for the receipt of alarms transmitted from the fire-alarm central stations. Two alarm circuits are extended to each fire station, and both have supervisory current flowing continuously. At each house one circuit is provided with a Morse key and sounder, which is adjusted to operate on the supervisory current and is used for conversational signaling. The alarm-receiving equipment at each station on both circuits is designed to operate on an increased flow of current, which is set up in the alarm circuits by the central office transmitter for each tap of the signal transmitted. One main-line bell on each circuit at each station is energized by the current generated at the central office. The balance of the bells throughout the fire company station—and there may be as many as six—are energized by the local source of power supply through local circuits that are operated and controlled from a relay or from a contact spring assembly mounted on the hammer of the main-line bell.

The two-way radio-telephone system provides communication of limited means for the entire department. The radio equipment consists of a control room in the Fire Alarm Central Office in the Borough of Manhattan. This room is connected by land lines with a headquarters transmitter installed in a Fire Department building in the Borough of Queens, and with a stand-by transmitter installed in a Brooklyn school building. The two transmitters are unattended. Each is remotely operated from the control room. Radio receivers installed on eleven fire boats and in forty-six mobile units, are fixed-tuned to the 1.630-kc frequency of the headquarters transmitter. Each fire boat and twenty of the mobile units equipped with two-way service are provided with

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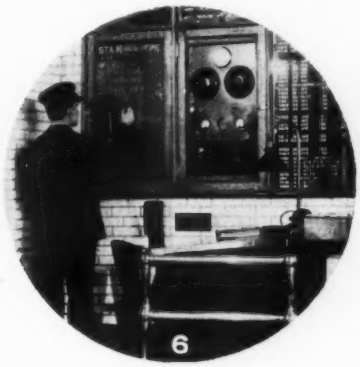
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Portrayed on these pages are the seven steps involved in getting fire-fighting equipment to the scene:

1. **Fire discovered and reported.**
2. **Alarm being received.**
3. **Assignment card being checked with running sheet.**
4. **The alarm is being transmitted.**
5. **Broadcasting the alarm.**
6. **Alarm received in company quarters.**
7. **The fire.**

a transmitter having a frequency of 35,580 kc. Signals put on the air from the mobile transmitters are picked up on seven remote fixed-tuned receivers. These are located at those points throughout the city which will insure a pick-up coverage within a radius of twenty-five miles of the control room. These seven remote receivers are connected with the control room by land lines routed in fire-alarm cables, thus completing the cycle of two-way operation. Although the radio system supplements the regular wired fire-alarm service and is used quite extensively for the transmission of alarms, it is not regarded or used as a wholly dependable agency to dispatch fire companies to fires, except in the case of units equipped with two-way service.

Fire-Alarm Signal Traffic

A brief word must be said about the signal traffic that is handled. Movements of fire companies from their stations are the direct result of the transmission of coded signals on the alarm circuits. As shown below, in New York City there are many types of special equipment other than the regular pumping engine companies and hook-and-ladder companies, whose movements are governed by special signals.

COMPANY TYPES	NUMBER
Engines	232
Hook-and-ladders	127
Water towers	6
Rescue trucks	4
Ambulances	3
Searchlights	4
Bridge chemical engines	4
Smoke ejectors	2
Airport crash trucks	1
Fuel wagons	3
Emergency utility trucks	1
Thawing devices	13
Field kitchen	1
Fireboats	10
Fireboat tender	1
Air compressors	2
Fire service supervising units	2
Foam powder supply unit	1
Total	417

In addition, there is a vast amount of special information and orders to be sent to the entire department. This can be done most rapidly by the transmission of special coded signals. The large number of companies who are to receive this information prevents prompt and dependable transmission by telephone. A complex and extensive code of signals has been evolved which is designed to move equipment and special services of the department with swift precision under the most exacting circumstances. The magnitude of the work and the responsibility of the New York City fire-alarm dispatcher may be realized from the statistics of the fire-alarm traffic for the year 1946. In that period, 62,108 alarms were transmitted over the alarm circuits, or approximately one every nine minutes. These 62,000-odd alarms transmitted were responsible for, and actually caused, several hundred thousand telegraph signals to be received in the central stations.

Fire-Alarm Dispatching

Each fire-alarm box has a prearranged and definite assignment of engine companies, hook-and-ladder companies, chief officers, and special equipment, up to and including a fifth alarm. Each company is provided with an assignment card for each fire-alarm box, and the companies respond automatically on receipt of the alarm to which they are assigned. Such assignments provide for responses to the fire and also provide automatic relocations of companies from distant points into the quarters of companies that responded to the fire. These automatic relocations generally provide a coverage of about 50% of the normal strength. The first alarm response usually consists of three engines, two hook-and-ladders, and two chief officers, brought forth by a box alarm, which may be sent by anyone. Second, third, fourth, and fifth alarms are calls for additional forces beyond the initial response and may be transmitted only by an officer of the department at the scene of the fire.

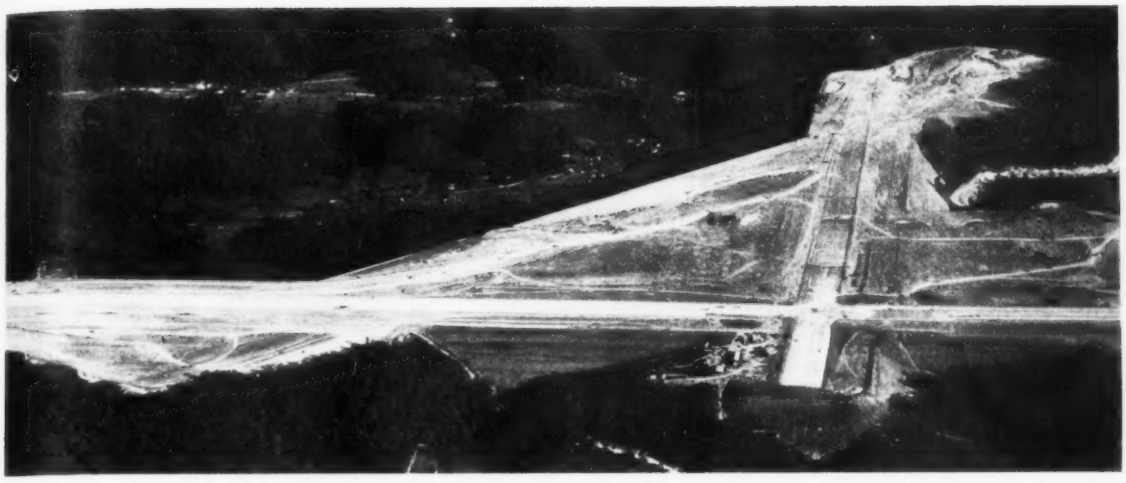
The dispatcher in the central office is responsible for an adequate response of companies to all alarms received. Companies do not automatically cover the assignments of adjoining units that may be absent from quarters. Should a first alarm be received from a box, and the company's regularly assigned men are absent from quarters, the dispatcher is required to cause at least one engine, one hook-and-ladder, and one chief officer to respond by the transmission of appropriate signals. On second, third, fourth, and fifth alarms the dispatcher must provide as many companies as are actually assigned. These regulations place a heavy responsibility upon the dispatcher. It necessitates an extremely careful recording by him at all times of the companies that are out of quarters, and requires further that the dispatcher relocate units into areas that are stripped of fire-fighting protection as a result of several simultaneous fires.

Under normal conditions the transmission of a fifth alarm does not create a difficult problem from a dispatching viewpoint. It will cause as many as twenty-six engine companies, four hook-and-ladder companies, a half-dozen chief officers, and a number of special pieces of equipment to be temporarily unavailable for any other fire service, but automatic relocations of companies provide ample fire protection in the depleted area. Complications arise, however, when several first alarms are transmitted in the same general area, or when two or more major fires are in progress at about the same time. The dispatcher must be constantly alert and must endeavor to anticipate eventualities in order to be prepared to move companies without delay to points where their services may be required. The transmission of several first alarms in the same general area at about the same hour happens frequently. Two or more major simultaneous fires are not of infrequent occurrence. Both tax the judgment, skill, dexterity, and resourcefulness of the dispatcher.

Plans for Extension

Each year a capital outlay budget is prepared and approved by the Board of Estimate, which is in the nature of a five-year plan. It is prepared on the basis of requests submitted annually by heads of city departments. These requests are scrutinized by the engineers of the City Planning Comission and the Director of the Budget. Only urgent and desirable requests are included in the final budget. For many years past, each annual budget has included approximately half a million dollars for fire-alarm improvements. It is confidently expected that there will be no change in this policy until a modern fire-alarm communication system has been extended to the remotest sections of the city. Present plans provide for the expansion of fire-alarm facilities along orthodox lines. New York City still regards the fire-alarm box as the speediest and most dependable means for summoning firemen. Specifications are prepared providing for thousands of fire-alarm boxes and fire-alarm post castings, as well as for hundreds of manhole head castings. Plans have been made for the installation of extensive underground duct facilities and hundreds of thousands of feet of lead-covered cables.

The technological advances in the radio field, developed by the exigencies of war, are now available for commercial and communications use. More dependable two-way radio communication in mobile units may be expected, which will warrant its installation in all of the fire company stations and on many of the mobile units of the department. The over-all possibilities of such a service are great enough to tax the imagination. It will not replace the present wired services, but it is reasonable to expect that it could displace a considerable part of the present complicated code of telegraph signals used in the City of New York. The expanded use of two-way radio would unquestionably increase the flexibility and the efficiency of the fire-fighting force. Studies and tests are now being conducted with the modification and expansion of the present radio system as their objective.

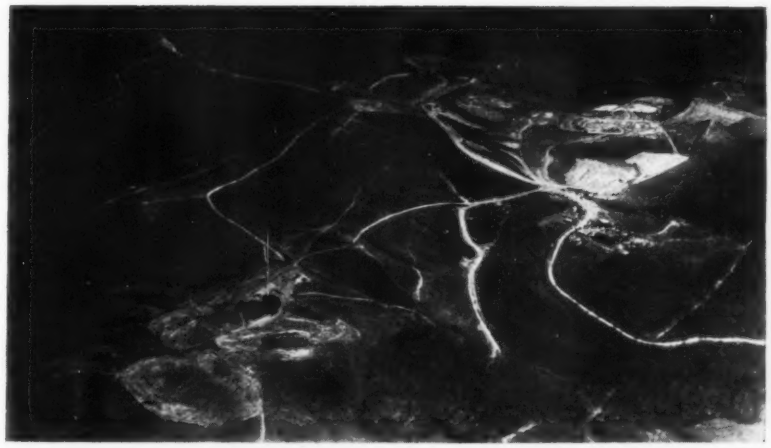


A section of the West Virginia Hills after grading equipment had carved a runway pattern for the new airport.

Kanawha County's Hilltop Airport

COUNTY Airport Director Fred Alley found the site for the Kanawha County Airport by accident. He had been looking for one for a long time. Since 1936, he, together with City Engineer Harry Campbell and others, had roamed the rugged hills that circle Charleston, W. Va. At that time, the local Chamber of Commerce had spearheaded a protest against the small, fog-bound airport located in the bottom of a valley, actually of not much use to any but a few small private planes.

By actual count, Engineer Alley had looked into and gathered data on at least fifty potential sites and was gathering more data at the time, when on a particular day back in 1940 his finger happened to light on a spot on the map where the contours seemed to spread just a little farther apart than usual. The spot was four miles from the Charleston post office, it was high enough to be permanently free of the paralyzing fogs that crippled the old airport, and it appeared that with a little engineering ingenuity it might be developed into one of America's finest ports.



And out of this chance spotting of a flattened-out mountain top came one of the most challenging civilian projects.

Center: Another view of the airport taken just at the start of construction.

Left: A La Plant-Choate scraper pulled by Caterpillar D8's works in a 56-foot cut which formed part of the grading operation.

of the post-war construction period.

Engineer Alley found a site located east of the city about two miles by air, and by road four miles. The site provided for a port 950 feet above sea level overlooking the industrial area in the vicinity of Charleston.

The site allowed construction of runways—the northeast and southwest into prevailing winds, 6,000 feet long; runways heading northwest and southeast, 5,000 feet long, and runways heading north and south, 5,500 feet long, with a possibility of extending it to 6,600 feet if it becomes necessary.

It utilized an area of approximately 300 acres and called for a total excavation of 9,000,000 cubic yards and a fill of 2,200,000 yards. The deepest fill was 216 feet, and the deepest cut was 130 feet.

But it is out of the zone of the paralyzing ground fogs which are prevalent in the valley and will make the Kanawha Valley extremely important from a point of passenger exchange, giving the citizens carrier service to every important point in the United States.

City-County Action

The City first tried to sponsor the airport, but found that it didn't have the bonding power. However, the City did draw up preliminary plans that formed the foundation of the study made by the County. The County voted a $3,000,000 bond issue for an airport with two runways, each 4,000 feet long, and employed Whitman, Requart and Associates, Baltimore Consulting Engineers, to make the study and prepare plans.

The original contract called for removal of 5,250,565 cubic yards of unclassified excavation and the installation of 20,000 feet of drainage for the two runways. In the meantime Congress voted a supplemental appropriation of $2,750,000 which permitted extending the project, making the #1 runway 6,000 feet long with a 5,200-foot paved surface and the #2 runway 4,950 feet long with a 4,750-foot paved strip. Each runway was to be 500 feet wide with 150-foot surfacing. The total excavation for the enlarged project now amounted to 8,947,000 cubic yards, which was awarded at a price of 45 cents per cubic yard. The maximum depth of cut was 130 feet and the maximum fill 156 feet, which toed out a total of 216 feet from the edge of the runway.

The project brought out one of the greatest arrays of excavating equipment to be assembled on a civilian project. The list ran something like the following:

	No.	*Capacity*
Caterpillar tractor-drawn LeTourneaus	13	22-33 yds.
	33	12-18 yds.
Pneumatic tractor-drawn LeTourneaus	8	14 yds.
Euclid dirt wagons	45	14 yds.
Euclid dirt wagons	3	25 yds.
Northwest shovels	9	2½ yds.

There were four trucks for each shovel and two trucks kept for spares. The average haul was 1,400 feet.

The specifications called for a compaction of fill material of at least 95% of the density determined by the Proctor test under optimum moisture conditions. The equipment always exceeded this figure.

For the runway subbase the specifications called for 14 inches of rotten sandstone with the depth extended to 19 inches at the ends. The sandstone varied in size from 3½ to ¾ inches and was choked with a dust of ⅜ of an inch or less. The stone weighed 700 pounds per square yard and the dust, 160. These were compacted to a minimum of 97% of density under optimum moisture conditions. Topping this is a 2-inch plant-mixed asphalt concrete surfacing.

The runways are both built on a 1% grade. Runway #1 slopes to the northeast and #2 runway slopes away to the northwest. The runways are drained by bituminous-coated Armco pipe with a maximum size of 30 inches. Six-inch perforated pipe gives drainage along the edges of the runways.

Lighting is to be of the flush type along the #2 runway and of the high-intensity type along the #1 runway where instrument flying will be concentrated. Present plans call for the Civil Aeronautic Administration to install the ILS type of landing aids.

Five airlines already have received certificates to operate out of Charleston, and a great deal of private flying is only awaiting the completion of this improvement. The importance of such an airport to mountain-bound Charleston can be seen by comparing airline and roadway distances to Washington, D. C. The former is 268 miles while the latter is 394 miles.

The runways utilized local stone quarried out of the cut for the base and subbase, and thereby saved the county approximately $1.50 per square yard. The runways are designed for a gross load of 86,000 pounds.

Present plans call for an administration building and one large hangar. The administration building will be constructed of native stone.

The airport will be managed by Mr. Alley. The project is being graded by the Harrison Construction Co., Pittsburgh, Pa. The Allegheny Asphalt Co., Pittsburgh, constructed the paving and drainage portions.

Does Federal Airport Act Meet the Need?

IN some respects it does, says W. R. Macatee, Manager, Airport Division of the American Road Builders' Association, and in some respects it doesn't.

From the standpoint of the construction industry, it is within the ability of this industry to do the job. Despite the fact that the number of contractors able to build airports is not so large as the number which existed a few years ago, nevertheless the use of high-speed mechanical equipment has greatly increased their efficiency and ability to perform this volume of work.

From the standpoint of sharing the cost burden, the airport act also meets the need. The act provides that the sponsor's funds may come from one or more sources. This encourages participation not only by the immediate sponsor, but also by the states and counties in which the projects are located. A suggested formula for sharing costs other than land goes as follows: United States, 50%; state, 25%, and sponsor, 25%.

In case the municipality and the county divide the sponsor's share, each might assume 12½% of allowable construction costs and a somewhat larger proportion of land costs. This might have to be varied for certain western states, with large tracts of non-taxable public and Indian lands.

The bottleneck, concludes Mr. Macatee, does not appear to be a question of the amount of federal air funds, but a question of the states assuming their share of sponsor's portions. States who participate in these costs would have an important voice in the development of the airport program within their borders. Moreover, the obligation is not great. In Virginia, for example, the average annual outlay by the state would amount to $450,000 per year.

With 24 Fire Companies from 13 Towns

We Lick a Full-Scale Woods Fire

Back-pack pumps were the most effective weapons in three field and forest fires which swept through part of Maryland.

By JOHN H. O'LEXEY, Chief
Jessup Volunteer Fire Department
Jessup, Md.

EARLY last Easter morning, our fire department received an alarm calling it to a woods fire at Odenton, Md., which had started along the Pennsylvania Railroad about six miles from Jessup. Our firemen had just left town when a Baltimore & Ohio train pulled out of our station, its flying sparks igniting a nearby dry field. The high wind quickly swept the fire from there right on through Jessup. I was leaving to join my men in Odenton when I learned of this new outbreak. Knowing the territory that was on fire, I called for aid from Fort Meade and Glen Burnie and continued into Jessup to direct the borrowed companies.

Indian fire pumps were distributed to anyone who came by. As companies arrived, they were positioned at points to keep the fire from spreading to homes. The Elkridge Fire Department sent over two companies, and Savage, one. The telephone strike at that time further complicated the situation, and difficulty arose when I tried to phone companies outside our exchange. Some exchanges cooperated quickly, while others did not. Time was of the essence in this fire, and no second could be wasted explaining in detail the purpose of the call to the operator. Therefore, I was forced to call the Maryland State police to ask for a radio car. Our own company was instructed to return home to fight the Jessup fire. Fort Meade, when summoned further for all its available manpower and equipment, sent 1,500 men, 450 pump tanks, and shovels and other ground tools.

Called to a phone, I was informed that a new fire had broken out in our district, about two miles from us at Hanover. More help had to be summoned from Ellicott City and from towns in the lower part of the county. Dr. Wright, Warden of the Maryland House of Correction, sent us prisoners and guards who were experienced in fighting woods fires. Chief Charles Eckman of Fort Meade flew over the burning area in an Army scout plane to inform us of the extent of the fires. While he was in the plane, I received a message from him that the fire was headed for the back door of my house. We arrived just in time to ward it off.

The dry grass burned like kindling, the fire spreading in all directions over a wide area. Washington, D. C., was asked for help and sent seven companies. After a full day's siege, the fire along the Pennsylvania's tracks was placed under control. We were then able to turn our full efforts toward the Hanover fire, and extinguished it after hard fighting.

The greatest damage of all the fires was the total ruination of the woodland that was ready for cutting for wood pulp. It will take years for these trees to be replaced. Fortunately, there were no injuries or homes burned.

Every natural barrier was used—roads, streams, plowed fields. Indian fire pumps, which we use exclusively, were our best weapons, allowing men to get into places where fire apparatus couldn't. Twenty-four fire companies fought these fires: one each from Glen Burnie, Ellicott City, Herold Harbor, Arbutus, Kensington, Silver Spring, and Jessup; two from Fort Meade, Savage, Elkridge, Linthicum Heights, Violettsville; seven from Washington, D. C.

We haven't had a woodland fire of such severity in fifteen years. They start every year, but are put under control quickly. This one got out of hand because the fire apparatus was being used at another fire, and the high wind spread the fire fast and furiously.

$50 and An Old Engine

From 1925 to 1932, Jessup's fire loss in buildings was over half a million dollars. In 1932, I thought it was high time that a move be made to organize a volunteer fire department and donated the first $50 toward the project. Next, we organized a board of directors, elected by the people of our community. I was selected Chief by the board and have held office since then.

The Glen Burnie Volunteer Department lent us an old engine with which they had started their fire department. We used it until 1935, when we purchased a Studebaker pumper designed by me and built in Baltimore. Early in 1942, we received a new White fire engine which had a nine-man cab and all tools and equipment enclosed. It was our pride and joy until in that same year, while rushing to a fire, it was totally burned in a collision with an oil truck. Our attempts to buy another engine were thwarted by the War Production Board. Now that the war is over, we have another engine on order and expect delivery this year. At present, we have only the pumper and a 1929 Ford roadster—the Chief's car.

Jessup's Volunteer Fire Department is in good condition, with our brick fire house paid for and a personnel of thirty-five active firemen and nine members of the Board. The Ladies Auxiliary has been of great help to us in raising funds to help pay for our new fire engine and some of the fire equipment.

Cracks in the reservoir floor were cut open and filled with thick cement grout to a point three-quarters of an inch from the top of the floor. The remaining space was filled with a rubberized bituminous joint filler.

Hagerstown, Md.,

Rehabilitates a Reservoir

HAGERSTOWN, Md., has revitalized a forty-year-old reservoir that had apparently about outlived its usefulness. Built in 1907 to hold 10 million gallons and constructed of limestone masonry walls and a concrete floor of unknown thickness, it had developed a daily leakage of approximately 300.000 gallons that Superintendent R. C. Will-

Superintendent R. C. Willson inspects the reservoir wall extension. Here the floor cracks are completely filled and covered with water. The masonry wall in the background has not yet been covered with gunite.

Gunite application plugs a 300,000-gallon-per-day leak and adds 1½ million gallons of storage.

son was determined to check. The reservoir is on the highest point in town and supplies pressure to the distribution system, and he reasoned that there was no use pumping 300,000 gallons of water all the way up there without using it.

At the suggestion of Whitman, Requardt and Associates, Consulting Engineers, Baltimore, Md., he called in the Cement Gun Co., Allentown, Pa., and asked for an estimate on lining costs. This company's engineers recommended a two-inch lining around the walls and on the floor. Superintendent Willson amended this to include guniting the walls and caulking the cracks in the floor. He looked with favor on a proposal made by the consulting engineers to add 2½ feet to the wall height by this same process, giving him an additional 1½-million gallons of storage and increasing the pressure throughout the city by a pound per square inch.

In guniting the wall, the operators use 6-gage-mesh reinforcing on 4-inch centers. In the extended wall section, they use ½-inch vertical deformed bars, 2 feet on centers, and ⅜-inch bars laid horizontally at 1-foot centers. The lining on the face of the wall is a minimum of 2 inches thick. The wall extension is 12 inches thick at the base and 3 inches at the top.

The concrete floor of the reservoir proved to be of inferior quality. When the cracks were opened, they became entirely too wide to be caulked by any normal joint filler. Superintendent Willson instructed that they be recaulked with thick cement grout and sealed with Carylastic or Servicized Para-Plastic joint filler.

Hagerstown has two sources of supply. One is a mountain reservoir furnishing up to 4½ mgd. The balance comes from the Williamsport filter plant, located on the Potomac River 10 miles from Hagerstown. Both supplies are chlorinated to a free residual in accordance with the breakpoint process.

The construction was designed by, and is under the supervision of, R. N. Gillespie, Chief Engineer for the Cement Gun Company. The project cost approximately $22,000.

Emptying the reservoir so that repairs could be made proved to be a ticklish task. Superintendent Willson tried to do without the reservoir entirely and depend solely on direct pumping for his distribution. This proved to be impractical. His pressure curves varied all the way from 10 to 90 pounds per square inch, and he had the misfortune to blow out a section of weak main. The normal distribution pressure stays close to 50 pounds per square inch.

However, the reservoir had a 4½-foot divider wall in the bottom, and during construction he has been using the 4½ feet on one side for an equalizing reservoir, then alternating to the other side when required. This required careful pumping, but relieved the virtually impossible situation that existed before.

Since he has plugged the reservoir and made it virtually leak-proof, several spring supplies located nearby suddenly have gone dry; springs that evidently had for many years been supplied by leakage from this reservoir.

Over Seven Billion for Water Supply and Sanitation

THE United States must spend an estimated $7.8 billion for water supply, sewerage, and waste disposal in order to meet the needs that exist today, according to a study made by the U. S. Public Health Service, Engineering Division. Of this, $2.2 billion lies in the water field, $3.7 billion is for sewerage facilities, $166 million is for refuse facilities, and $1.6 billion is for all types of sanitation needs for rural homes. These costs are based on those existing as of June 1946.

The survey records that almost 40% of this needed construction is at least in the planning stage. Over 9% of needed sewerage facilities, costing approximately $360 million, is ready for construction now, and an additional 24%, costing $908 million, is being definitely planned. Almost 17% of the needed water systems, costing $381 million, is ready for immediate construction, and plans are in progress for an additional 27%, costing $612 million.

Two-thirds of the work that is ready for construction and half of that in the planning stage are in cities of more than 100,000. These cities include about 41% of the total population in all communities. In towns of less than 1,000 only about 10% of the needs will be met by projects now ready for construction or in the planning stage.

About one-third of the $2.2 billion needed for water works is confined to the development of water supply sources. Much of this reflects the high cost of completing New York City's Delaware water-shed supply, the development of an upland supply to replace Philadelphia's present badly polluted supply source, and additional developments to augment Denver's existing sources of supply. Approximately one sixth of the water works needs is for treatment facilities and one half for the distribution systems.

The sewerage needs, amounting to some $3.7 billion, will be spent at the rate of about one third for treatment works and most of the remainder for collecting and intercepting sewers. This will provide more than 80,000 miles of sewers, more than 12,000 new sewage treatment plants, and additions to some 1,000 plants. About 9,100 communities, chiefly small ones, need complete sewer systems.

To meet garbage and refuse needs, some 12,000 trucks are required. These will cost almost $50 million. About $70 million will be required to build 1,090 incinerators, and $25 million should be spent for bulldozers and draglines to operate 5,500 sanitary land fills. Land and miscellaneous expenses require an additional $20 million.

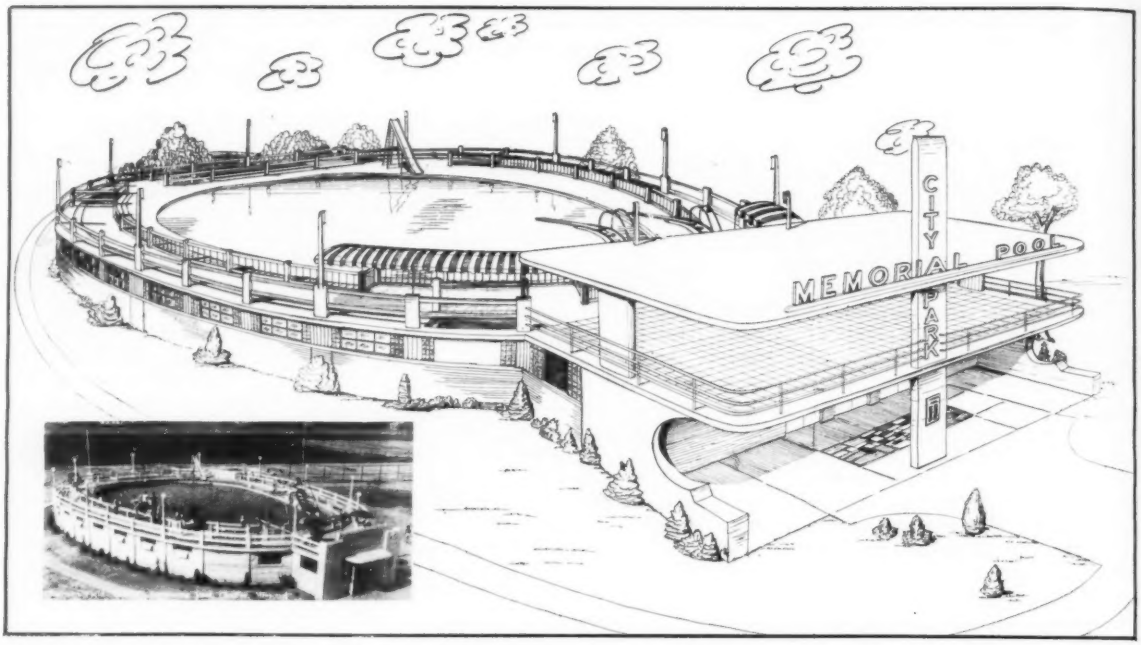
The survey indicates that more than 2 million persons living in communities of over 200 population have no community water supply systems, and 79 million live in communities where the systems need improvements. More than 6 million persons live in towns and cities that need new sewerage systems; over 79 million live where improved systems are needed, and only about 6½ million are served by adequate systems at present.

The per capita costs of the needs vary from $23 in Rhode Island to $107 in New York State, with the average about $60 for the entire nation. The per capita cost of needs is greatest in the smaller communities and smallest in the larger. In the towns of less than 1,000 population, the needs exceed $100 per capita, while in cities of over 100,000 population the needs are somewhat more than $80 per capita. In the intermediate cities, the cost runs less than $50 per capita and in the rural areas, about $40 per capita.

A full report of this inventory will be available from the U. S. Public Health Service, Federal Security Agency, Washington, D. C., in the fall.

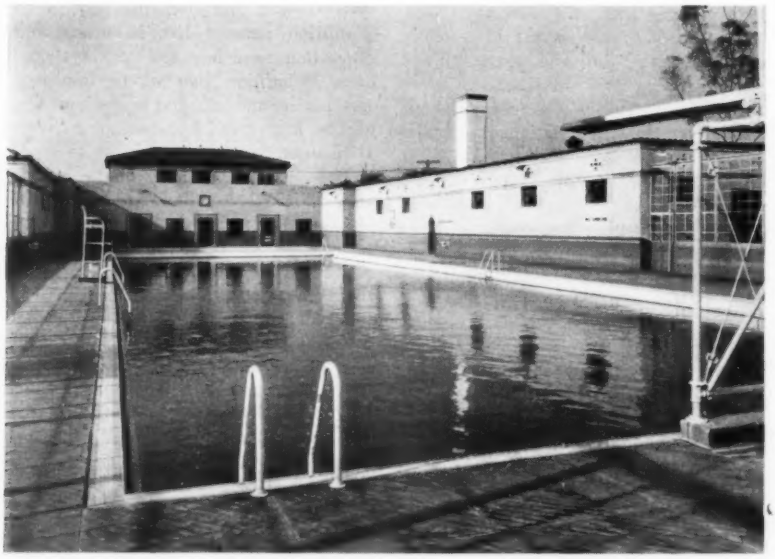
SWIMMING POOLS

By WESLEY BINTZ



Here is the pool designed by the author. The inset shows a pool of this general type located in Harmon Field, Me.

MAN'S desire to attain earthly immortality for himself or for others he wishes to commemorate has produced, through the ages, many types of monuments and memorials. Some are beautiful, some dignified, some both, some neither. Some of the objects so erected and highly valued by the men of yesterday are still exerting a tremendous influence for good in our daily lives. On the other hand, some of these objects are costing taxpayers a great deal of money for many reasons, such as interference with civic-improvement planning, presenting hazards to transportation, posing problems of maintenance and upkeep, and the like.



Spanish-style architecture was used for this swimming pool in Berkeley, Calif.

Memorials After First World War

Since the day a chipped old rock was enclosed in an iron fence with a "Don't Touch" sign, great strides have been taken in the type and design of memorials. Sentiment after World War I was changing rapidly in this respect, as in many others. Increased social activity demanded more housing for itself. Increased participation in sports required more room for the contestants. Increased taxes demanded more value received for the taxpayer's dollar spent. What was more logical than that communities desirous of commemorating some event or person turned to a memorial that would give them something for their money that could serve combined purposes, and *without detracting from the primary objective of being a memorial.*

The community house, playfield, or

As War Memorials

A well-designed pool can be combined with a community building having memorial features and clubrooms, a lounge, and a dancing or band platform.

public park have been predominant as the objects that serve the most people. Highways and similar utilitarian projects have been used for the same purpose, but these give less of the sense of belonging to the people who erect them than does a city park or a playground which can be used by generations of children to come. These children may not feel the direct effect of the happening that brought about their memorial, but they will become more worthwhile citizens because of it.

After World War II

And so, once again we are in an era of great activity in building memorials. This is only fitting and proper. If the ideas are carried out as they are now being developed, we shall see much civic development, fewer memorials of the mausoleum type, and more emphasis placed on the value of our memorials as objects for the welfare of man.

Today's thinking is, therefore, along the lines of structures not only esthetic and beautiful, but functional as well. Sport centers of all kinds answer this description. They include stadia, band shells, camp fireplaces, community buildings, and swimming pools, costing little or much, depending upon the ability of the community or the donor.

Popularity and Costs

Those familiar with recreational facilities know that a community which has a swimming pool can plan that, on a maximum day, 7% to 10% of the population would use such facilities, whereas not more than 1% to 2% will play any other type of game.

The cost of providing recreational facilities can be figured in various ways; one method is what is known as "man-use" cost. To explain: a tennis court properly built with back-stops will cost about $2,000. Four people can use this court. That means $500 each for a place for a person to play. Golf courses, due to extensive land costs and club houses, run from $1,000 to $3,000 per man-use cost. A shuffle board court costing about $100 can provide a place for four to play with a man-use cost of $25.

A swimming pool will run from about $125 to $200 per man-use, depending on type and kind of pool, equipment, construction, and other details. Considering the fact that from ten to twenty times as many persons indulge in this sport as in any other, this substantial but relatively small man-use cost of a swimming pool is highly justified.

Types of Swimming Pools

There are, of course, all kinds, shapes, and sizes of swimming pools available for use as memorials. There is the conventional sunken pool and bathhouse which has a history of about 2,000 years, and in which the bathhouse must more or less represent the memorial. The pool itself lies in the ground, is full of water, and is purely functional.

This writer has developed what is known as a Bintz swimming pool, which is a combination swimming pool and bathhouse. It is possible to combine this two-level swimming pool with a community building. This increases materially the functional use of the pool and bathhouse and gives added facilities for towns which do not have such a building for the use of the young and the old for their various activities. Whereas the swimming pool is used only during seasonable weather, the community building is used the year round for offices, clubrooms, parties, and meetings of all kinds. Costs are also materially reduced by this combination.

Suggestion for Financing

Financing of swimming pools is varied. It ranges all the way from bond issues to subscription and gifts. One of the best ways is for communities to ascertain from a proper source the size and cost of the swimming pool that should be built, raise about a quarter to a third of that by subscription, and go to the City Council for a bond issue on the balance. That type of set-up almost never fails. Enough interest should be generated in the subscription campaign to put over the bond issue. It hardly need be stated here that for the greatest satisfaction one should use a competent and experienced professional engineer for assistance in the planning of such a memorial.

The above photograph shows the attractive municipal pool of Seguin, Texas.

War Memorial Library to Serve University and Community

Kansas Wesleyan project is financed by alumni and students of the University and by business firms and citizens of Salina.

By MAYNARD J. HAMMOND

A STOREHOUSE for sources of knowledge and learning is the kind of war memorial desired by Kansas Wesleyan University. A two-story, modern, and completely equipped library will be erected on the campus at Salina, Kans., to be dedicated to the memory of the twenty-five Wesleyan boys who paid the supreme sacrifice and to the more than 500 others who served in World War II.

In addition to having new equipment of the latest design and an ample stock of books and reference material, there will be the ultra-modern feature of the audio-visual room on the second floor. All this wealth of information will be not only for the use of the students but will be open also to the public.

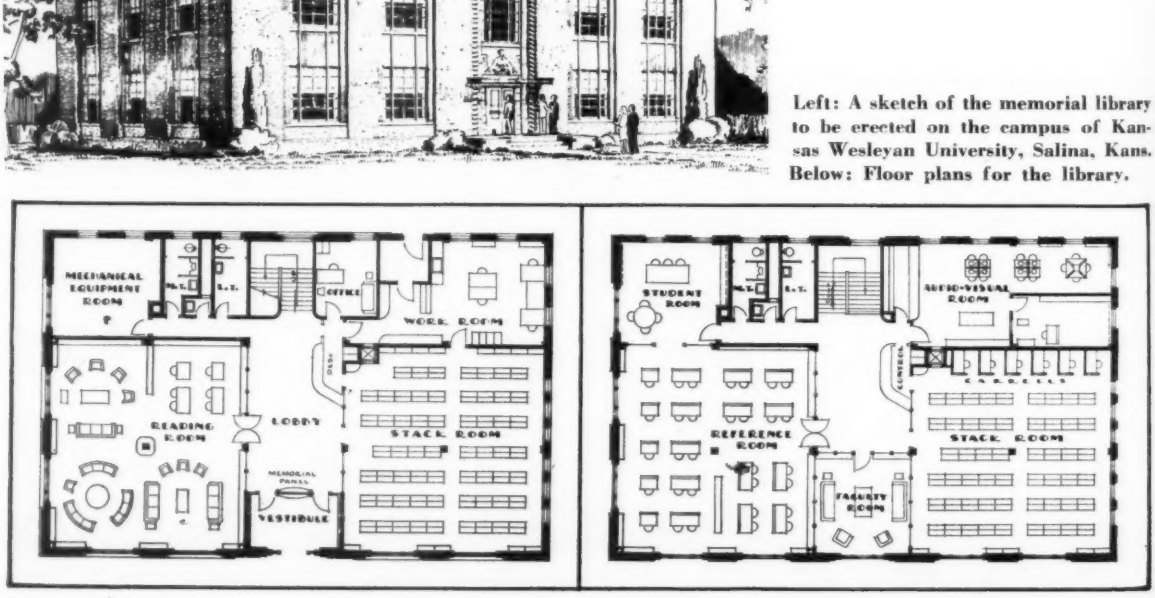
One needs only to refer to the training and teaching of the armed forces in World War II to appreciate fully how rapidly difficult subjects may be taught through the audio methods. Before the training of men for warfare in the Far East, it was considered a task requiring years to learn the Japanese language. This time-consuming operation was reduced from years to months through audio methods. Having audio equipment in the War Memorial Library of Kansas Wesleyan will facilitate the study not only of foreign languages but also of the English language. It will make possible the transcription of classroom recitations and lectures, thereby considerably reducing the time in acquiring proficiency.

Today and in the future, the outstanding method for exchange of information of rare books and large volumes by libraries is through the microfilm process. Experience indicates how little space is required in condensing many volumes through this procedure. This means that the students of Kansas Wesleyan will have available this valuable material, which, even if the original texts were available, would be much too costly to purchase and house.

Efficient use of the library will be aided also by the provision for privacy in reference work assignments. A large quantity of reference books can be taken into one of the six carrells located in the second-floor stack room. There the individual has sufficient space to lay out all his work without being disturbed and without causing untidiness or conflict with others using the main reference and reading rooms.

Especially Designed Faculty and Student Rooms

The Faculty Room is especially designed for study and conference sessions. Here parents of students, or alumni, or the public at large may consult with members of the faculty or administrative staff. The fact that the present forty-six members of the faculty contributed a total sum sufficient to set this room apart as a memorial is a grand tribute to their interest and devotion, particularly when the salary scale of each is viewed. The students



Left: A sketch of the memorial library to be erected on the campus of Kansas Wesleyan University, Salina, Kans. Below: Floor plans for the library.

and alumni also will memorialize the Student Room. This is another fine tribute, and the action of these three groups greatly enhanced the interest and impetus for the entire campaign.

Kansas Wesleyan University first opened the doors of the original building, Lockwood Hall, for matriculation in September 1886. This school was "mothered" by the Methodist Church, which has provided liberally for current operating funds. However, the school has prospered and grown beyond the church support through its public relations program within the community. Few look upon this institution as sectarian. . . most view it as one of the finest assets of the community and are willing to give generously for its maintenance. This same willingness prevailed in responding to the request for the capital funds needed to erect this War Memorial.

Campaign Goal Exceeded

The campaign goal for Salina and Saline County was set at $110,000—approximately 50% of the total construction cost. At the time this article is written, nearly $130,000 has been subscribed to the fund, and more is expected. The memorials established by families and individuals are included in this figure. Some of these are the Reading Room and Office on the first floor and all the carrells on the second floor; the Elks Lodge of Salina created a memorial in the second-floor Control Lobby.

The present library quarters are housed on the top floor of the Science Hall. Sandwiched in between odors from the chemistry laboratory and from the Home Economics Department, these "temporary quarters" were established thirty-nine years ago. The citizenry of Salina and Saline County rallied to the request for funds to erect this fine structure. There was recognition not only of the drastic need for new library facilities but also of the fact that no better way could be found to honor the heroism of those who served under the colors of our country and to maintain the faith of the University founders than through the erection of this Library as a "living memorial."

Recognition of the importance to the nation of the smaller liberal art schools has been evidenced by the public subscriptions to the Wesleyan Memorial Library. But further evidence is the fact that this new structure will be one of three to be erected. The others will be a $200,000 Fine Arts Building, the gift of Earl C. Sams, President of J. C. Penney Company, and a new dormitory for women, made possible by a $200,000 gift from the late Mrs. Henry Pfeiffer.

Recent Trends in Sources of Municipal Revenue

Summary from the 1947 Supplement* to "Where Cities Get Their Money"

By A. M. HILLHOUSE

THE year 1946 was one of unusual activity in the municipal revenue field. The pot not only boiled, but in some cases blew the lid off. Outstanding developments were:

◆ Adoption by Toledo and St. Louis of local income taxes, patterned after the Philadelphia tax. The major difference is that the two new taxes reach the net profits of corporations.

◆ The enactment by one California city after another in rapid succession of a local sales tax. The last count showed 54 California cities with this tax, and with the number still growing.

◆ The widespread installation of parking meters, which far surpassed the record of any previous year. Approximately 450 new cities installed parking meters in 1946. The total number of cities with parking meters at the end of 1945 was 473. This represented a growth over an 11-year period. The number adopting this device during the calendar year of 1945 was approximately 40 cities. The year 1946 thus brought an increase eleven times greater than in 1945, and almost as many again as during all the years 1935 to 1946.

◆ The addition of seventeen more cities to the list of those using a local cigarette tax.

◆ The appearance of a new local tax—a percentage levy on hotel room rentals. New York City and Providence, R. I., are the pioneers with this new tax.

◆ The adoption by the New York State Legislature of a plan to stabilize local finance in that state. The Moore Plan substitutes a guaranteed level of state aid for general municipal purposes in place of shares in fluctuating state-collected taxes.

◆ Use by the city of Baltimore for 1947 of a blanket authorization from the Maryland State Legislature (law approved November 1945) for the city to enact and levy for a two-year period (January 1, 1946, to January 1, 1948) any of the taxes which the state could levy. This authority was not exercised for the calendar year 1946. During 1947 Baltimore will receive an estimated $4,550,000 from its new revenue sources.

◆ New York City, after a careful review of its revenue problems, enacted new measures estimated to yield an additional $67 million per annum.

Other less spectacular, but nevertheless important, developments can be cited:

◆ Revisions by many cities of service charges (water, fire protection, garbage collection or incineration, and sewer service) made to users who are outside the corporate limits. Cities are waking up to the fact that they have been furnishing services at or below cost to individuals and industries that contribute nothing to the city's tax revenues.

◆ An increased growth in interest in municipally owned and operated parking lots, and the beginnings of an interest in establishing municipally owned and operated public garages in downtown shopping districts. Miami Beach and White Plains are recent examples of the former, and Bluefields and Wheeling are pioneers in the latter. The primary purpose of these developments is the solution of difficult parking problems. These types of enterprise, however, may prove to be good revenue sources.

◆ Sharing by the State of California (bill passed over the Governor's veto) of $90 million of the state surpluses with the counties and cities for post-war local improvements.

◆ A great increase in Florida in the number of cities levying a tax on consumers' utility bills, following enabling legislation by the State. More than 25 cities in Florida now have this type of tax.

◆ An outlawing of such a utility tax in Ohio by the Ohio Supreme Court.

◆ Adoption by referendum in Michigan of a 1/6th share to cities of the state sales-tax yield.

◆ The appointment in a number of cities (Norfolk, Richmond, Atlanta, and Minneapolis—to mention a few) of special commissions or committees to study the difficult local revenue problems.

One highlight of the year was almost forgotten. One city was found that lowered a tax!

Nobody, on January 1, 1946, could have predicted accurately the city revenue developments of the year. Similarly, almost anything can happen in 1947. Legislatures are meeting in regular session this year in 44 states. Cities are busily presenting their needs. New legislation and developments may be expected from every section of the country.

* Published by the Municipal Finance Officers Association. (See page 137 of this issue of THE AMERICAN CITY.)

Arlington County, Va.,

Makes Sewage Treatment Plans

ARLINGTON County, Va., a fast-growing suburb of our nation's capital, has on the books plans for a sewage treatment plant that will replace its present facilities, which are little more than a gesture toward sewage treatment. The present plant, with a nominal 5-mgd capacity, is receiving roughly 6 mgd of sewage from the southwesterly part of the county. It also receives sewage from the area of the county tributary to the Potomac River in an amount again averaging 4 mgd, but it makes no pretense of treating this and simply by-passes it at the plant. A third area, a small southerly corner, also contributes one mgd, which is added to the flow from the other two lines.

The plant was built in 1937. It consists of a bar screen, a screenings grinder, settling basins, a heated digester with a gas holder, a sludge storage tank, and approximately one acre of drying beds. In 1937, its services were considered adequate, but since that time Arlington County has grown far too fast for any rational city planner to anticipate. Arlington's population in 1935 was about 35,000. Today it is about 125,000. The estimated population for 1965, which is the basis for the plant capacity provision, is 200,000.

Arlington County officials realize the shortcomings of their sewage treatment plant, just as they recognized the inadequacies of their water supply and distribution system. However, an adequate water supply was the need that could not wait. Arlington's distribution system reaches now into portions of the county that only a few years previously were pasture and farmland (see THE AMERICAN CITY, page 78, June 1946).

But while adequate sewage treatment construction had to give way to the more important job of fighting a war, its planning did not. The County called on the services of Alexander Potter Associates to design a plant that would be adequate to meet both present and future sewage treatment requirements.

The plant they designed will provide for an average flow of 20 mgd and will provide treatment based on the requirements of the Interstate Commission on the Potomac River Basin. This advisory body has recommended that waters in the area conform to the following criteria as a minimum:

pH	6.0 to 8.0
Dissolved oxygen	Average 4.0 ppm for any month. Minimum daily average of 3.0. Absolute minimum of 2.0 in any day.
5-day BOD	Maximum of 5.0 ppm.
Other	No toxic substances, oils, tars, or free acid at any time. No floating solids or debris except from natural sources. Slight localized sludge deposits, if unpreventable, are allowed.

Engineering studies showed that primary treatment together with chlorination during the summer would meet these requirements.

The design calls for the use of grit chambers, comminutors, settling tanks, and chlorinators to treat the liquid fraction, and for digesters, elutriation tanks, vacuum filters, and either sludge drying or incineration as a final method of disposal. A refuse incinerator is planned in connection with the sewage treatment plant so that joint disposal of both garbage and sludge may be conducted.

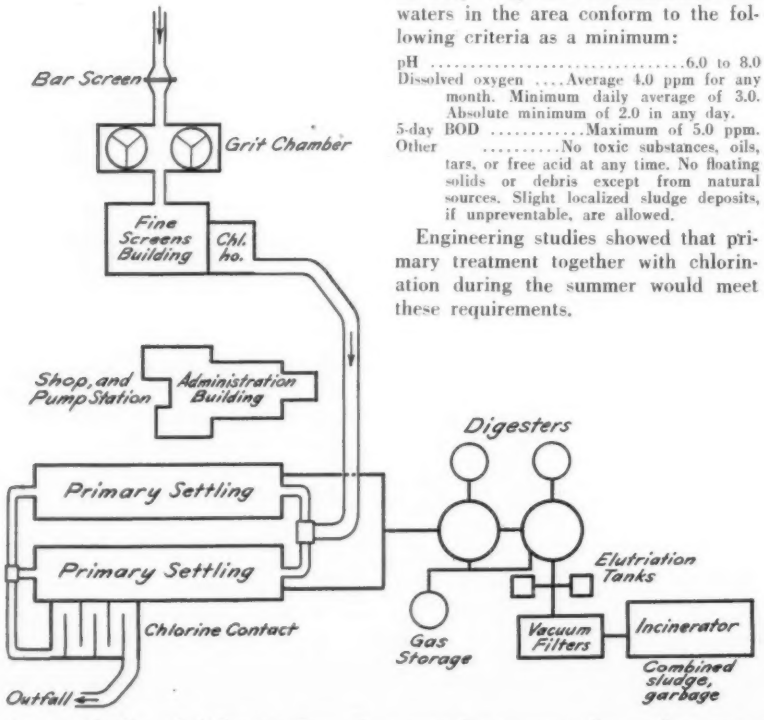
Flow through the plant will be by gravity, except for approximately 1 mgd, which reaches the plant at too low a level. This portion of the flow will be raised at the plant to join the balance of the flow. Two 700-gpm electrically driven pumps and one 1,400-gpm electric-and-gasoline-powered pump for standby service will be utilized for this purpose.

The grit chambers are designed to remove 95% of the particles coarser than #65 screen and with a specific gravity of 2.65 or greater. There will be two of these chambers, each capable of handling a flow of 25 mgd. Grit handling to fill the area will be by pneumatic ejectors. Following the grit removal operation will be the comminutor. These are specified with a drum diameter of 36 inches, and each will have a hydraulic capacity of 25 mgd. Comminuted solids will be returned to the sewage flow.

The settling tanks are designed for an average flow of 20 mgd and will furnish a 2-hour detention. The chlorine contact chamber is designed for a 15-minute contact time at average flow of 20 mgd. Chlorinator capacity is based on provision for application up to 18 ppm, divided to provide 6-ppm pre-chlorination and 12-ppm post-chlorination. The chlorinator equipment will consist of two solution-feed vacuum chlorinators, each of 2,000-pound chlorine capacity per 24 hours, with automatic control from the Parshall flume, and re-use after capacity increase of the existing manual-control solution-feed vacuum chlorinator now equipped with 1,000-pound output. Injector water for the chlorinators will be settled chlorinated sewage effluent.

Digesters will be provided in primary and secondary stages. The primary digesters will have a capacity of 175,000 cubic feet, and the secondary 103,000 cubic feet.

To make vacuum filtration more efficient, the design contemplates the use



A general plan of Arlington County's proposed treatment plant enlargement.

Primary treatment with seasonal chemical precipitation for a community which has grown 350% in ten years.

of elutriation by the cross-current two-stage method. The annual chemical savings by this method, based on experiments conducted during the study, are estimated at an ultimate figure of $7,800 per year. Sewage effluent will be used for wash water.

Vacuum filters will be provided to handle a maximum load of 3,160 pounds per hour. The total filter area required will be 790 square feet, to be provided by four units each with 200 square feet.

To dispose of the sludge, either of two methods will be used. The sludge may be dried in a sludge flash-dryer or incinerated. In either case, the final operation will be coordinated with a refuse incinerator and the end residue disposed of as fill in adjacent swamp land. Also included are provisions for grinding a portion of the dried sludge cake for use as a soil conditioner.

Grease removed from skimming operations will be burned in the refuse incinerator. Heat from the refuse incinerator operations will be utilized in drying of the sludge filter cake.

By-product sludge gas will be stored in a spherical gas-holder under 30-pound pressure. This gas will be used mainly for building heat and sludge-process heat and as an auxiliary fuel for refuse incinerators.

Existing settling tanks, which are 80 feet long, will be extended to a length of 188 feet 6 inches to form two of the four settling tanks to be provided. Their utilization will involve removal of the present effluent walls and modification of the influent walls. Similarly, the existing sludge digestion tank and sludge storage tank will become the secondary digesters after modification.

The present service building will be utilized after revisions and additions. The present screen room will be discontinued and the low-level wet-well and pumping equipment removed.

Don't Destroy the Humus

By J. P. TAYLOR
Research Engineer, Retired
Tenafly, N. J.

IN view of the inadequate supply of organic matter available from conventional sources for soil improvement purposes, it may be said without fear of valid contradiction that our towns and cities are saddled with a responsibility to the farming areas which they are, today, generally ignoring.

This responsibility arises from some fundamental facts of life. One of these is that cities must have food, and their industries raw materials, in order to maintain their existence. A second is that our farm lands, on which the food and many of the materials are grown, must use larger quantities of organic matter in order to maintain soil fertility or the whole system will break down. This breakdown is already under way.

Nature builds soil fertility by returning to the soil the organic material that grows out of it. This dead matter decays and forms humus, which is the essential element of the black topsoil. There is no other way of building soil fertility. The application of the chemical nutrient elements alone will not do it. They do not contain the raw materials of humus. They will aid in forcing such raw materials from a poor soil, but unless a large proportion of that raw material or its equivalent is returned to the soil, we reach soil exhaustion. The problem of restoring to the soil its lost humus content has become one of our most urgent national concerns.

At present, sanitary engineering authorities do not show much interest in the humus value of these wastes. A study of Manual of Practice No. 2 on the *Utilization of Sewage Sludge as Fertilizer* issued by the Federation of Sewage Works Associations indicates that some attention is being given to chemical fertilizing values in sludge. A substantial number of towns and cities dispose of some parts of all of their sludge in various forms as fertilizer. The manual gives the results of many chemical analyses of sludges, and it is noted that the usefulness of sludge is considered primarily from the angle of its chemical contents rather than from that of its potential humus value.

However, the fact that it has some humus value is recognized. The composting of waste organic matter is only touched upon and without relation to sewage matter, although certain experiments in the use of sludge in composting in England are briefly mentioned. Recommendations to sewage works operators are made at the end of the manual, but none is included in the direction of the compost process as a means of producing humus for more lasting soil improvement.

Composting Is Practical

Composting offers a logical way to capitalize on these humus qualities. It destroys all identity of the original raw material. It yields an end-product resembling decomposed vegetable matter, without odor and clean to handle. When properly managed, it gives a compost relatively free of health hazards common to raw sludge, since the composting material has maintained a temperature of about 160°F. for a number of days.

The process consists of building layers of sludge and vegetable matter such as straw, or other coarse material grown for the purpose, with a thin layer of earth and a sprinkling of wood ashes or lime. These layers are built up to a height of around 5 feet, are thoroughly wet as assembled, and the pile is not allowed to dry out. Odors may be eliminated during the composting by covering the pile with a thin layer of earth. Garbage together with some paper provides a good source of organic material. The animal matter in the sludge and garbage acts as an activator to promote heating and decomposition through the action of bacteria.

The method of converting animal and plant wastes into a finished fertility promoting agent has been extensively adopted in India, South Africa, and New Zealand on many large plantations. English farmers have adopted it also, and English sewage and agricultural authorities are working on its application to sewage and garbage wastes. One hundred or more towns in South Africa adopted this method during the war for the conversion of "night soil" to agricultural uses. Sir Albert Howard, author of *An Agricultural Testament* and *The Soil and Health*, in an article in the February 1947 issue of *Organic Gardening*, states that he has been using sludge in his composting operations and finds it an idea activator. He also points out that sewage-plant effluent is rich in the plant nutrients—nitrogen, potassium, and phosphorus—and that these nutrients may be extracted by plant growth for composting before the effluent is finally sent into streams or lakes.

The City Tells Its Story—V

Have you a know-how collection?

THERE is every reason why your municipality and the various branches of your local government should make as much good use of the tools of public relations as do those countless industries and businesses whose public relations activities are always coming to your notice. A great deal of their continuing success has been largely due to good public relations work.

You can make your city similarly successful by expert handling of your own Municipal Public Relations if you will but employ the tools.

There is no reason why you should not grab onto these tools and put them to work for yourself and your community—in your dealings directly with the public and in your press relations, in your radio programs and your public speaking, in your film presentations and your exhibitions, in your school programs and your employe relationships.

Much can be learned and a great deal gained, for your own MPR know-how, from studied observation of what is being done, public relations-wise, in business and industry. Watch for opportunities to do this, or make them, if you have to, and you'll pick up many an idea that will give you something to think about.

And —

If you haven't begun to collect ideas, why not start now? Get all the dope you can and see how you can adapt it to work for you and your city or your department.

These ideas—and the tangible products of them, whatever type the tools and methods may be—are practical and realistic. They are not just for show; they mean business. They are not flights of fancy; they bring results. They are not drolleries for the dilettante; they are ways for the worker.

National associations operating in specific fields offer a constant source of material, some of which you may be able to tap and, in fact, may be using already. This point has been previously touched upon* and remains one of the important ten tests of your MPR.

Are you giving enough attention to what these associations are putting out? Remember, they have taken many a cue from the successful work of advertising agencies and public relations firms; they are also not ignoring the practice of public relations by business and industry.

Each of your municipal departments should collect its own file of information material from the respective sources to which the specific department is most closely related. But it will profit little to glance over these and then file them away. They should go to your public relations committee or officer, who should then devise the best method for getting the most from them by applying the tools to whatever problem they can help meet.

Your water works department is particularly fortunate in the public relations aids put out by the American Water Works Association (500 Fifth Avenue, New York), and if you find there's a real MPR job coming up for this department in your city, you can get to work on it pronto—and well—through the AWWA. Its "Silent Service Is Not Enough" continuing studies and its other aids are extremely valuable.

1000 HOMELESS BY FIRE
CHILD STRIKES MATCH, STARTS OIL TANK FIRE
Porches Ablaze Cause Injury to Fireman
Fire Losses for One Year Would Build 75,000 Homes
Blaze Routs 60 Guests At Winthr
Fire Expert Points to H in Renovating Present
New Fire Disasters Make Nati
Prevention-Min
Architect Demands Public Be A
Circus Fire Brings New Safety Rules
MAMMOTH FI
A Public Relations MANUAL for FIRE DEPARTMENTS

Striking cover of the first public relations manual for fire departments, just published by the National Fire Protection Association. Note emphasis on newspaper medium, tying in with fire stories and fire prevention stories.

Fire Department MPR

Shortly your whole municipality will be giving the usual special annual attention to fire prevention. It is not too early to set your sights and lay your plans for this campaign. The nationwide work done over the past years in fire prevention can be strengthened by your own fire department's wise use of sound public relations tools in this year's special municipal effort to cut down fire loss and in continuing year-round use of these tools.

Is your fire department acquainted with the "Public Relations Manual for Fire Departments," just published by the National Fire Protection Association (60 Batterymarch Street, Boston, Mass.)? Here's something that will give your department a working guide in the ways and means of gaining public interest and support of its activities.

This is the first time that a book has been produced specifically dealing with fire-department public relations.

*See THE AMERICAN CITY for May 1947, page 82.

By HENRY DAVIS NADIG
Director of Public Relations
Regional Plan Association
New York, N. Y.

It is an excellent job and fills a real need. For the very color and indispensability of your fire department tend to leave the public unaware of some of the activities, achievements, and problems of the department.

The 30-page booklet, animated with black-and-white illustrations, is designed to help firemen see to it that the public gets in the know on the things that make your department tick. The manual runs the whole gamut of MPR tools—from news releases to keeping a file—opening with a statement on the reason for the book which is followed by a definition of fire-department public relations.

Because this manual simply and clearly whips into shape the basic tools of public relations for fire departments, it may seem to some to be just a repetition of know-how formula. Maybe so.

But the fact is that no matter how much these methods are explained and detailed themselves, it can't be too often. Those who are not in public relations, but who believe they have sufficient MPR know-how, may pass this book up. If they are connected with your fire department, they may be making a mistake.

Few, if any, outside the public relations profession can do a successful job for your fire department without using the basic know-how set forth in the NFPA manual—whether they get it from the manual or elsewhere.

The time of by-guess-and-by-gorry is over; the days of hit-or-miss MPR are numbered. Too much of your community's welfare and stability depend today upon sound public relations to allow MPR to go by chance.

How Good is Your City?

The Municipal League of Seattle makes the question, "How Good Is Your City?" the title of a 32-page booklet report issued in May. Here is an example of another type of organization doing a real public relations job.

In this case, the coverage is for the whole city and the job is one of showing the people of Seattle how their city stacks up against twelve other cities of similar population and having problems like those facing Seattle.

The Municipal League does this with some notably smart graphic presentations, so that the eye is not belaboured with text but drawn to the symbols, captions, and figures. The effect of these bright spots is to give you the information quickly and to intrigue you into reading the text.

From the content of this booklet, you can readily see that Seattle's Municipal League has learned a good deal in the fifty-three years of its existence and, furthermore, has the know-how to keep driving ahead. A look at the record of things done and things to do will tell you the story briefly, if you can snag a copy of the booklet. (If you get one, you'll want it for the publication section of your know-how file!)

Below: Oglesby, Ill., has no newspaper, but this town of 3,938 population has live-wire City Clerk Edward Hand. By such fliers or leaflets as these, he endeavors to let the people of Oglesby know what is going on and to exhort them into civic consciousness. Above, right: A typical page from the superbly graphic report, "How Good Is Your City?" published by the Municipal League of Seattle. Note effective use of symbols. The League has got to change that planning picture.

Louisville Anchors the Cost

An all-out mechanization program for water main extensions and services.

HARD as it is to believe, Louisville, Ky., is installing water mains, services, and meter boxes at bargain rates. The municipally owned water company has been able to keep the cost of installing mains from rising for the past four years; has been able to push pipeline labor costs to a six-year low, and has actually been able to lower the cost of installing services. B. E. Payne, Manager of the Water Company, has no secret agreement with material men nor any unconscionable policy on labor rates, but pays the asking price for both. To get his low total cost he has gone all out for mechanization.

To build a main extension before the war, water department crews went out manned with ten to twelve workmen who manipulated the pipe by hand, eased it into place on skids, and generally worked hard, but slowly.

Today, a crew will be composed of four or five men. The mains, valves, and fittings will be picked up by a small truck-mounted crane and lowered into a ditch that has been dug by a Barber-Greene ditcher. Later the ditch will be backfilled by dirt which is eased into place by a bulldozer.

Before the war, services were installed with a hand-digging tool; today these services are jacked automatically into place with either a Hydrauger or a pipe-pusher in less than a quarter of the time.

To make service laying easier in certain specialized locations, Louisville has a small ditch-digging machine that is mounted on the back end of a jeep. If required, this little mobile unit can dig a ditch about 6 inches wide and 5 feet deep.

Above: To set a meter box, Louisville drills the hole with this 24-inch power-driven army issue auger. Below, left: A couple of water distribution veterans. Distribution Superintendent John Schuler (right) talks with Pipeline Foreman Robert Holland as the main extensions go forward. Below, right: A jeep-mounted Auburn Machine Works ditchdigger simplifies the problem of digging service ditches in certain areas.

PIPE-LAYING SERVICE INSTALLATION COSTS FOR LOUISVILLE, KY.
1939-1947

Year	6-inch C. I. Mains per Foot Material	Labor	Total	Base Labor Hourly Rate	5/8-inch Copper Services[3] Material	Labor	Total
1939	.89	.66	1.55	.50	9.86	19.58	29.44
1940	.92	.52	1.44	.50	9.35	17.29	26.64
1941	.92	.49	1.41	.53	9.62	18.30	27.92
1942	.97	.69	1.66	.57½	11.08	19.83	30.91
1943	.94	.84	1.78	.64	10.05	19.16	29.24
1944	1.02	1.12	2.14	.65	12.38	35.32	47.70
1945	1.04	.84[1]	1.88	.65	13.32	34.99	48.31
1946	1.21	.70[1]	1.91	.80	14.67	29.86[1]	44.53
1947	1.48	.66[1]	2.14	.87½	11.10[2]	27.35[1]	38.45

[1] Mechanical equipment use.
[2] Two meters per vault.
[3] Does not include meter cost.
Labor costs as shown include equipment charges and supervision charges.

A Barber-Greene ditchdigger cuts the cost and labor of pipeline extensions.

To install meter boxes, B. E. Payne, Manager of the Louisville Water Company, bought an army truck-mounted, power-operated post-hole digger and put 24-inch blades on it. With this he can bore out cleanly and quickly the hole necessary to set the meter boxes at a fraction of the cost for hand labor.

Where street service cuts are required. Manager Payne has a specially built truck that carries an Ingersoll-Rand air compressor and a dump box, so that in one self-contained unit will be all the equipment necessary to cut through the pavement and repave it later. A tool box is mounted on top of the air compressor.

Around the water department maintenance yard, two men use a Jaeger Fleet Foot mobile crane to pick up pipe and other fittings, thus doing the work at a saving of both time and manpower.

In order to make heavy equipment easily available throughout Louisville, water works maintenance men use a Martin Carryall trailer. By this method, the Caterpillar tractor with its bulldozer blade moves as quickly and as easily as a heavy truck.

Three surplus Army shop trucks were purchased and the interiors equipped with tool, boot, and material storage bins, a desk for the foreman, and special equipment storage spaces. These units are used as mobile construction shanties that can transport the pipeline construction and maintenance crews and their tools to and from the jobs. These units are returned to the yard each night and hence are available for emergency calls at all times.

A Martin Carryall trailer means quick transportation for heavy equipment.

Above, left: A Trident compound meter that was installed quickly and easily with the truck-mounted crane. Above, right: A Jaeger Fleet Foot crane makes the work of moving heavy pipe and fittings easy. Below, left: Where it took 10 or 12 men to set pipe, now a crew of four with a truck-mounted crane can do the job. Right: A truck-mounted dump box, air compressor, and tool box make a portable outfit for repairing pavement cuts for water services.

Does Salt Damage Autos?

By CARL D. WARNER
Assistant Superintendent of Sanitation
Department of Public Works
Detroit, Mich.

This Pneu-Hydro road machinery loader digs into a stockpile of salt in the Detroit Public Works yards. It can pick up 7 tons of salt in from 3½ to 5 minutes.

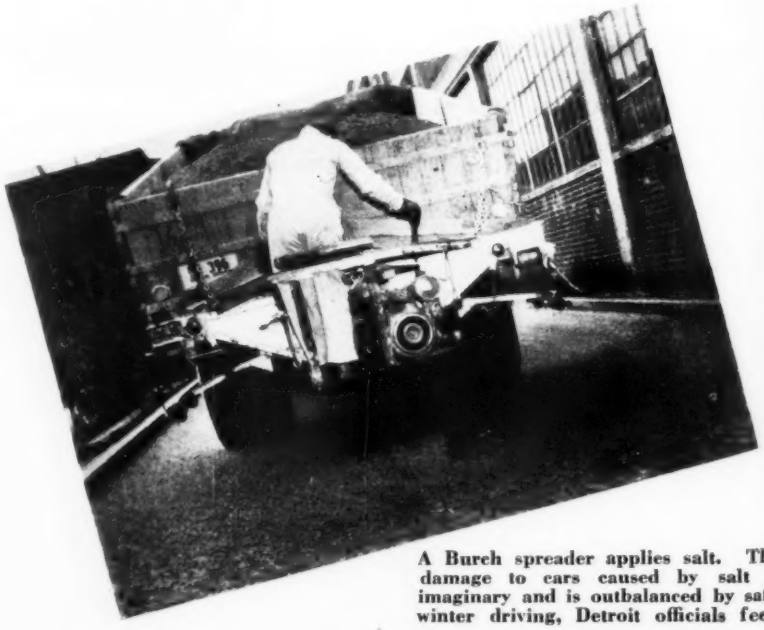
THERE has been much controversy over the advisability of employing a salt alone in preference to an abrasive such as sand for snow removal or ice control, the principal complaint being that salt corrodes the under side of a car. There is no question that salt is a corrosive agent if allowed to accumulate in one spot for any length of time. For example, a handful of salt placed on concrete and allowed to remain will result in spalling the concrete. It has been found from experience, however, that if a car is kept clean by regular washing no noticeable corrosion is observed.

We are informed that experiments conducted by reliable laboratories have led to the conclusion that salt will not increase corrosion over 5 percent. We are also informed that this has been a subject of intensive research by the Automobile Manufacturers Association, and that they feel the age of the average car on the road is the prime factor in the present discussion on corrosion. The water of condensation, running down the windows on the inside of the car and being pocketed between automobile doors and frames, and the plugging of seep holes by road dirt, have been the main cause for corrosion. In addition to this, the strip of fabric placed against the fender and the body and the chassis has acted to hold moisture. Also, the muffler, which has been moved farther to the rear of the car to prevent noise, has caused the exhaust gases to condense before reaching the muffler, and corrosion takes place from the inside.

To those held responsible for removal of snow and ice in this city, there are three factors kept uppermost in mind:

- Safety is our primary objective.
- Detroit is a city of mass movement. These masses move through the city day and night, especially when shift changes take place within our industries. It is of paramount necessity, therefore, that the main arteries and streets be kept in safe condition for vehicular traffic.
- The same condition holds true of places where there are many pedestrians and office workers, such as in the downtown loop area.

For years, ashes, cinders, and some sand were used on the icy streets, but the complaints still came in. Observations revealed an abrasive by itself is glassy, and on iced surfaces would not stay put. The least wind, or even the exhaust from a car, would whip the material off the streets. So we began experimenting by adding salt to the abrasive and also using pure salt. We had much better results. In Detroit, we



A Burch spreader applies salt. The damage to cars caused by salt is imaginary and is outbalanced by safe winter driving, Detroit officials feel.

This report, made by Superintendent Warner for presentation by the Commissioner to the City Counsel, answers in the negative.

are confronted with quick freezes and thaws. The majority of our snows are light, with the result that the streets may be perfectly clear of snow and ice, yet a half hour later they may be a traffic hazard.

In using salt alone, we discovered the following results:

- Almost immediate action in getting down through the ice, permitting a vehicle to obtain positive friction.
- The vehicles carried the salt along, thereby obtaining complete coverage of streets.
- The solution of brine eventually ends up in the sewer basin, and this keeps it from freezing, thereby preventing many floods during quick thaws and rains.
- No residue remains on the streets, which is the case where an abrasive is used.

Continuing our experiments with sand and an admix of salt we found:

- Too much delay was experienced in the mixing operation. As previously stated, an abrasive by itself is almost useless, but is of some value if mixed with a salt compound. The two must be more or less thoroughly mixed to be effective, because it is the salt eating into the ice that gives the sand a chance to imbed itself, thereby forming a friction-bearing surface.
- If an abrasive is used it means huge stockpiles, and we do not have space for this.
- A considerable labor item is mixing the material with salt.
- Many times it is necessary to go out more than once during a 24-hour period for several consecutive days, which requires double hauling and handling, with resultant additional cost and delay in getting on the streets. Our procedure now is to haul the salt directly from the mine to the various district headquarters over the city, with only one handling involved.
- Sand or other abrasives remain on the street, become an eye-sore, and on a windy day blow into the pedestrians' faces or over the sidewalks, finally ending up in the sewer basins and then on to the big sewer barrels, removal from which costs extra money.

In our opinion, from a safety standpoint, *time* is of the essence in fighting snow, sleet, or ice. We cover some 300 miles of arteries and main streets. They are completely spread with pure salt in an outside time of 4 hours, depending upon what time during the 24-hour period the emergency occurs. It takes longer after midnight than during the day, because men are working during the day and can be changed over quickly to meet the emergency.

Salt absolutely melts snow up to a depth of 1½ inches, leaving a clean, dry pavement. The use of rock salt has made it possible for us to combat snow, ice, and freezing rain instantly, and to prevent frozen slush deposits or hazardous ice surfaces. Because of safe driving surfaces, skidding and collisions are, of course, enormously reduced. Motorists save also because their gasoline goes farther—from 10% to 20% farther—when they drive on bare streets. This is according to the National Bureau of Standards tests.

We are one of the pioneers in the use of pure salts, having had ten years' experience with it. Many other cities are following suit.

For example, New York City started on salt in 1944 and used 9,500 tons; in 1945, 35,000 tons, and in the first three months of 1946 used 14,445 tons. Data on other cities are as follows: *

City	1944 (Tons)	1945 (Tons)	3 Months of 1946
Indianapolis, Ind.	200	395	40
Jackson, Mich.	280	200	230
Flint, Mich.	214	255	278
Kalamazoo, Mich.	40	80	145
Muskegon, Mich.			90
Pontiac, Mich.	78	158	121
Cincinnati, Ohio	716	1,079	1,786
Cleveland, Ohio	1,563	1,977	1,951
Columbus, Ohio	150	240	250
Toledo, Ohio	120	330	280
Youngstown, Ohio	140	250	220

* This report was presented on September 30, 1946.

New "Curtain Wall" Promises Construction Savings

THAT new methods and techniques are needed in the construction industry if housing and redevelopment costs are to be substantially lowered, there can be little doubt. A design which promises many economies in multi-story building was announced last month. Called the "curtain wall," it has been developed by William Lescaze, Architect, and Robert L. Davison, Designer, under the sponsorship of the New York Housing Trust, a non-profit, privately endowed organization.

Modern steel or concrete "skeleton-type" construction has long since reduced the function of a wall to that of a skin incorporating fire and weather resistance, as well as thermal insulation. This leaves little real reason for traditional brick and mortar construction. Restricted building codes and restrictive trade and labor practices, however, have in the past prevented new surfacing systems from being developed and commercially available.

The panels developed by Mr. Lescaze and Mr. Davison consist essentially of metal sheets filled with an insulating material which are adaptable to conventional framing systems, standardized in dimension, but flexible enough to meet small but exasperating variations in ceiling heights, column spacings, and sash sizes.

Windows can be set at any point in such a wall. Other advantages are that weight can be reduced by as much as ten times, bulk by 63%, and cost by 42%—all, it is said, with no sacrifice in performance. To illustrate in other terms, a metal-clad wall panel 4 feet 4 inches square would consist of one unit, weigh 225 pounds, and cost $23.49. The same size in conventional masonry construction would consist of 115 units, weigh from 1,500 to 2,700 pounds, and cost $40.49. Although the new units, easily bolted to conventional building frames, are only 2½ inches thick, it is claimed that they are almost six times better for insulation against heat and cold than a solid masonry wall 13 inches thick.

Already, development engineers for the Pittsburgh Corning Corporation and Republic Steel have supervised the engineering and fabricating of several prototype units of the new wall, using stainless steel sheets insulated with Foamglas. It will still take time, however, before the wall units are available commercially.

It is to be hoped that obstacles to the usage of products such as the "curtain wall" will be removed, and that corporations and individuals interested in the potentialities of such a development will go into mass-production quickly. Only through the use of the most up-to-date construction processes will there be a greater chance to make some headway in the redevelopment of our cities.

A Water Works Shock Absorber

Norristown, Pa., installs a new clarifier versatile enough to treat raw water with solids varying from 25 to 25,000 ppm.

Norristown's 110-foot clarifier relieves its water treatment plant of "heart trouble."

A WATER treatment bottleneck is being widened in Norristown, Pa., by the construction of a new settling basin equipped with clarifying equipment sufficiently strong to handle unusual silt loads.

The Norristown Water Company draws water from the Schuylkill River that carries solids at its intake ranging in concentration all the way from a relatively clear 25 ppm to a muddy 25,000, caused mostly by sand and coal culm washed down from deposits in the river bed. The settling tanks had to be shut down frequently so that sludge could be removed manually with the use of hand-operated scrapers and by hosing for removal through drains. As water works engineers are well aware, the heart of the water treating plant is in the settling tank, and this plant was beginning to have "heart trouble." The balance of the plant is hydraulically and otherwise able to care for the city's water use requirements.

The plant's capacity is rated at 12 mgd, although it is called on to treat only an average of 4.9 mgd. It supplies this treatment by drawing raw water from the bottom of the Schuylkill River through a crib located across the river opposite the plant and pumped through a pipe line approximately 1,700 feet long by motor-driven centrifugal pumps at the rate of 9.4 mgd. The pumps discharge the water into an influent chamber set at an elevation high enough to allow flow through the balance of the plant by gravity. The raw water has certain difficult taste and odor problems presented by industrial wastes, including those from a Bakelite plant, but none is so serious that Nuchar cannot correct them.

The treatment embraces the usual alum and lime method and requires about one grain per gallon of the former and 0.75 grain of the latter. These dosages may be tripled during periods of high turbidity. The water receives its dosages of chemicals as it passes the pump suction and flows into the influent chamber. At this point, it receives its taste-and-odor correction application of Nuchar and then flows to shallow settling basins 30 feet wide, 150 feet long, and 2 feet deep, where it flows through at a rate of 0.16 feet per second. Following this, the water passes over two cast-iron plate aerators, each 30 feet wide and riffled to provide a maximum of turbulence. It goes then to the two final settling basins, each 130 feet long, 65 feet wide, and 10.7 feet deep, and from there to the filters. These settling units are completely covered by a concrete roof supported by outside walls, inside division walls, and columns. The chambers provide a detention period of 2.7 hours and a flowing velocity of 0.028 feet per second. Each basin slopes to a center drain from which water and sludge can be discharged into the sewer.

These settling basins provided the key to the operational difficulties. Silt settled, but in the shallow upper basins, and had to be removed by hand-operated scrapers. Furthermore, the rate of flow through the shallow basins was high enough to carry a large part of the solids over to the final basins. And it simply was not possible to remove the sludge from the lower basins by opening the drains. The water had to be drained and the accumulated sludge hosed down at frequent intervals.

To provide adequate sludge removal mechanisms to care for these needs, The Norristown Water Company, following recommendations of Gannett, Fleming, Corddry and Carpenter, its consulting engineers, installed a heavy-duty Hardinge clarifier 110 feet in diameter with depth varying from 10 feet at the sidewall to 17 feet at the center. The tank is designed for 85 minutes of detention at a flow of 8,400 gallons per minute, with an overflow rate of 1.265 gallons per square foot per 24 hours.

The tank is equipped with clarifier arms built so that they rise when they must move a silt load too great for them to handle on a single revolution. This allows them to skim over the top of these heavy sudden silt concentrations and keep scraping away until the entire loading is removed. Thus it avoids stoppage of the scraper mechanism except under extreme conditions of silt concentrations.

Two separate sludge draw-off pipes are provided so that sludge removal will not be interrupted when one of the pipes becomes clogged. One of the pipes has two outlets to minimize the need for throttling.

The tank's circumferential effluent, though measuring approximately 2 feet square in cross-section with adjustable weirs on both sides, is set about 3 feet from the sidewall, thus applying design principles that would allow greater flow and least carry-over of suspended solids into the effluent. This conforms with work on the design of final settling tanks for activated sludge developed by the Chicago Sanitary District. S. I. Zack, Chief Sanitary Engineer of Gannett, Fleming, Corddry and Carpenter, and formerly an engineer with the Chicago Sanitary District, performed and reported on these weir location experiments.

The revised flow schedule of the plant now calls for the new clarifier ahead of the two existing sets of settling basins. The pipeline delivers the chemically treated raw water to the new clarifier through a 30-inch diameter inlet. Water then flows through a 36-inch pipeline to the upper settling basins of the present plant. From there the water proceeds in its customary fashion to the lower settling basins and to the filter.

The clarifier and sludge removal facilities are based on a maximum anticipated removal of the suspended solids which amount to 25,000 ppm.

W. F. Zimmerman is President and Brinton Russell is Superintendent of Operation of the Norristown Water Company. The preparation of plans and supervision of construction were performed under the direction of Mr. Zack.

Water Charges for Fire Protection

WHAT constitutes a fair charge for a water utility to make for public fire protection, and how should this charge be assessed? Fred R. Witherspoon, Senior Engineer, Public Service Commission of Indiana, offered no streamlined formula to the meeting of the Indiana Section of the American Water Works Association in Indianapolis, but he did make suggestions which would eliminate poker-playing negotiations and put it on a scientific basis.

The fire protection offered by a water utility, he stated, should be based on an equitable return covering a fair value for that portion of a water works property used in providing such service. To determine this accurately, one should separate that portion of the system used for this purpose from that devoted to domestic water users. One should catalog, then, such items as hydrants, and certain valves for fire service exclusively, and should charge other items such as meters and services to domestic users. Other equipment, standpipes, reservoirs, pumping equipment, and mains, should be proportionately allocated.

One well-known formula, developed in 1910 by Metcalf, Kuickling and Hawley, provided a short cut which is useful for checking determinations of portions used for fire protection. The accompanying graph illustrates the use of the formula.

In the cities of less than 10,000, Mr. Witherspoon advised adjusting this percentage by taking into account deficiency points for a particular water service, as outlined by the National Board of Fire Underwriters. Since the Underwriters give the ideal plant 1,700 points, Mr. Witherspoon would obtain his factor by deducting the specific plant's deficiency points from 1,700 and dividing this by 1,700. Thus a city of 10,000 with 560 deficiency points would have a factor of 67. This figure multiplied by 60, the percent of the system devoted to fire protection as shown in the graph, would produce a final figure of 40 percent. This, he feels, would measure more accurately the amount of the system able to furnish fire protection.

Another short cut is the "maximum demand" method, which is based on a ratio of the maximum fire demand compared to the total combined demand for ordinary fire and general use. The Underwriter formulae for these demands are as follows:

Maximum fire demand (gpm) = $\frac{P}{5}(-+10)\ 200.$

Minimum fire demand (gpm) = $(1.7P^{\frac{1}{2}} + 0.03P)\ 200.$

General services = 2 times maximum day in GPM + 500 GPM.

For a city of 10,000 with a maximum day's domestic pumpage of 900 gpm, the calculations for fire protection requirements would be as follows:

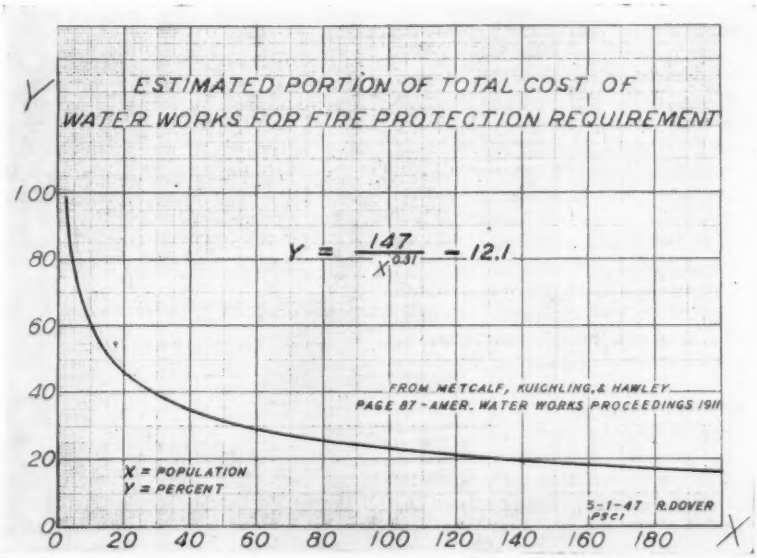
Maximum fire demand	2400 gpm	41%
Minimum fire demand	1200 gpm	20%
General Service	2300 gpm	39%
	5900 gpm	100%

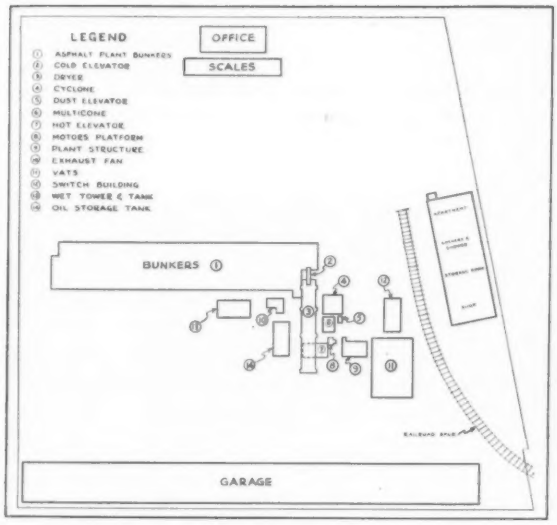
Fire Protection Portion = $\frac{\text{Maximum Fire Demand}}{\text{Minimum Fire and General}} = \frac{41}{59} = 69\%$

A Fair Method

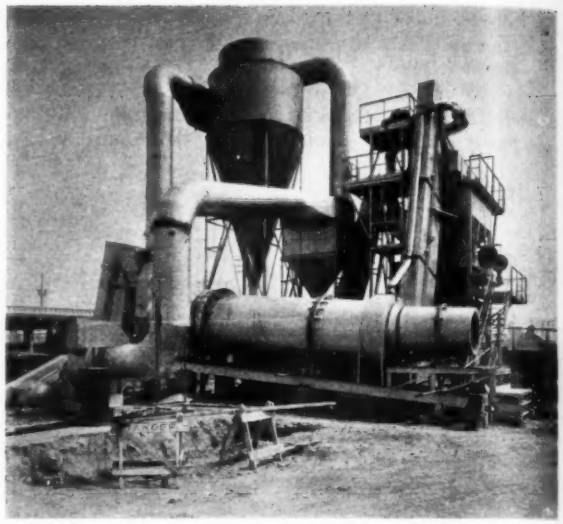
In allocating these charges, Mr. Witherspoon pointed out that commonly they are made on the basis of the number of hydrants in service. This is an unfortunate system, he feels, since it places undue emphasis on the hydrants and too little on the various items of accessory equipment which are required.

The inch-foot charge with a nominal amount allocated against each hydrant is a more nearly fair method. An annual charge of $10 to $15 per hydrant for maintenance is a just arrangement, with the balance apportioned over the distribution mains of 6 inches and larger on the basis of the number of inches over this minimum diameter and the number of feet of main. In small water systems, it would seem reasonable to compute the protection feature on the basis of a minimum 4-inch main.





Plot plan of Los Angeles' batching plant, showing locations of buildings and units of equipment.



A side view of the plant. Note the special elevator behind the multiclone in the center background.

Los Angeles' New Asphalt Plant

. . . uses advanced design to meet the requirements for a wide range of asphalt maintenance mixes.

LOS ANGELES, Calif., with nearly 5,000 miles of city streets to maintain, has acquired for itself mechanized assistance that puts America's largest street-repair program on a streamlined basis. This consists of an ultra-modern, $325,000, electrically heated, hydraulically controlled asphalt plant that can produce almost any type of asphalt mix speedily and in batches of close tolerance.

The plant is the third of those operated by the city. Prior to the war, the city had three plants with a total batch capacity of 9,000 pounds but found that it had to condemn one of the plants, thus putting a serious hole in the maintenance program. To plug this gap, the city laid plans for a new 4,000-pound installation to be built as soon as priorities allowed. The work started in December of 1945 and was completed in July of this year.

The new plant is located on a two-acre site in the central industrial district of Los Angeles. The plant design not only includes batching facilities, but also garage space for twenty 10-ton dump trucks, a shop, showers, lockers, living quarters for the caretaker, a switch house, a compressor house, a modern office, and a scale. Except for flame-dried aggregates, the plant is heated entirely by electricity.

The heart of the improvement is the asphalt plant, which is fabricated by the Standard Steel Corporation, Los Angeles, and assembled on the site under the supervision of its men.

With the new plant, the city can produce the wide variety of mixes that Los Angeles maintenance work requires. Sometimes as many as seven different types are required in a single day's operation. The new plant can mix 1,350 tons of material per 9-hour day if necessary, although budgeted requirements will limit this to a lower figure. Present plans call for a daily production of 894 tons, or 205,620 tons per year. This is nearly as much as the other two plants combined.

Plant Bunkers

The aggregate bunkers will allow storage of 1,000 tons of material. Built with the top at ground level and the belt conveyer in a tunnel 11 feet below ground, the bunkers are constructed of reinforced concrete and are 28 feet wide and 153 feet long. They have seven different compartments, as follows:

1½-inch stone	10	feet	wide
¾-inch stone	45	"	"
¼-inch stone	12	"	"
pea gravel	14	"	"
rejects	10	"	"
sand	22	"	"
crusher waste	22	"	"

All the bins have grizzlies made of steel rails. A steel canopy for weather protection is built over the entire length.

A single concrete tunnel 7 feet high and 8 feet wide, located directly below the bunkers, houses the belt-conveying system. The main belt, 304 feet long and 24 inches wide, receives material directly from gates in the bottoms of the bins except that sand and crushed waste are handled by four feeder-belts on 5-foot centers. The material desired for the normal mix is roughly proportioned as it drops onto the belt and is carried to the cold elevator pit. The careful control of the material plays an important part in keeping the plant operating at peak efficiency, since it eliminates the need of handling excessive amounts of material, prevents overloading the screens, holds carry-overs to a minimum, keeps hot aggregate storage bins at their proper working levels at all times, and prevents overheating when too little material is received.

A 39-foot cold elevator carries the aggregates from the pit. Its speed is set to deliver 150 tons of aggregates to the dryer per hour.

The dryer uses a shell of ½-inch steel, 30 feet long and 84 inches in diameter. The shell is of continuous automatic welded construction throughout. To improve drying efficiency, the shell carries twenty-one lifters of varying heights spaced equally around the inside perimeter. The first row is 6 inches high; the second, 7 inches; the third, 8 inches; the fourth, 6 inches

again. The lifters are 24 feet long and are staggered every 8 feet.

The cold-end cowl structure combines the dryer inlet chute and the base of the dryer exhaust. Its design delivers any dust falling back from the air stream directly into the dryer shell. An angle and flat-ring-segment type of seal is used between the cowling and the dryer shell which maintains a dustproof seal at all times regardless of any shell travel. The dryer tires have an 8-inch face and are made of 2½-inch hot-rolled mild steel with an outside diameter of 96 inches. Original specifications called for cast-steel tires, but the design was amended since the mild steel has less tendency to spall and will maintain its true roundness over a much longer time. The drum turn approximately 6½ rpm.

The firebox uses an unusual conical design. Made of 3/8-inch welded steel, it is 4½ feet in diameter in the fire-entering end and 5½ feet at the outlet end. Its 10-foot length gives a quick, efficient combustion of the gases. It carries tires mounted on four trunions so that it can be rotated and can distribute top wear evenly. The interior is lined with a 6-inch layer of Plibrico, a cast lining applied like wet cement.

The burner is a Bunsen type employing eight nozzles when using natural gas. When using fuel oil, air from a 360-cubic-inch compressor atomizes the fuel. When gas having a BTU content of 1,050 and a nozzle pressure of 20 psi is used, the burner can raise aggregates having a 10% moisture content to a temperature of 325°F. and can dry 150 tons of material per hour.

The outlet chute for the materials leaving the dryer shell is built within the cowl at the firebox end. Labyrinth-type seals prevent the loss of dust.

The hot elevator, which carries the dried aggregate to the vibrating screens at the top of the plant proper, consists of two completely enclosed units. These units, bolted together, form the complete elevator assembly, including all bearings, shafts, and the bucket line.

The plant uses a Symons 48-inch by 14-foot doubledeck vibrating screen. A 15-hp motor transmits power to the eccentric head to supply the vibrating action. The screen has four wire sizes as follows:

Material	*Screen Size*	*Screen Openings*	*Wire Size*
Sand	4 x 8½ ft.	App. ⅛ in. x ½ in. clear openings	16 gage
¼ in.	4 x 9 ft.	⅜ in. clear opening	12 gage
½ in.	4 x 5 ft.	⅝ in. clear opening	8 gage
¾ in.	4 x 5 ft.	⅞ in. clear opening	4 gage

Located directly below the screen is the hot storage bin, with a total capacity of 25 tons. Its four compartments provide space for 6¼ tons each of sand and ½-inch rock; 5 tons of ½-inch to ⅝-inch rock, and 7½ tons of ¾-inch to 1-inch rock. The outlets from each bin compartment to the weigh-box are equipped with gates operated by Vickers hydraulic units.

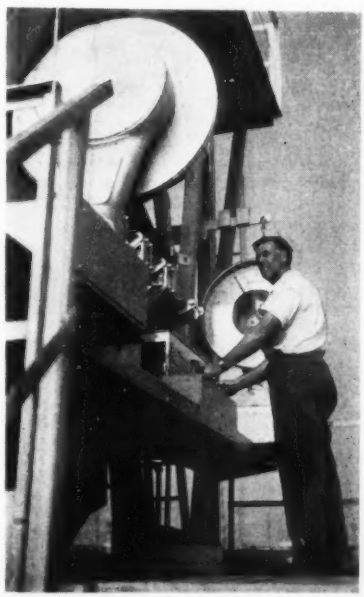
On the side of the plant is located a 6-ton overflow bin. Spillage from the four storage bins goes to this bin in an enclosed chute where it can easily be removed by truck.

The materials go from the storage bin to a weigh-box carried on a 4-point suspension mounting. Here a Kron springless scale with a 30-inch dial and a capacity of 5,000 pounds measures the amount received. The weigh box and mixer are completely enclosed in a dustproof housing.

To prepare the 4,000-pound batch, the plant uses a pugmill mixer equipped with two parallel shafts, each having sixteen paddles rotating in opposite directions. The plant can produce a thorough mix in a 30-second cycle, but the city plans to extend this to 45 seconds as a safety factor. A hydraulically operated slide-gate allows a 4,000-pound batch to be discharged in 6 seconds including the time necessary to open and close the gates.

The designers stressed strength when building the pugmill. They built the side bottom and center bottom of a cast Meehanite with a Brinell hardness of 450 to 500. They made the mixer paddles of cast steel with tips of Meehanite that have a Brinell hardness of 500. They used dustproofed bearing throughout.

Foreman H. E. Norell takes a hand at the hydraulic controls which facilitate the operation of Los Angeles' new 4,000-pound dustproofed batching plant.



The asphalt weigh-bucket, with its conical bottom and 8-inch diameter outlet valve, can be emptied in 10 seconds. Hydraulically operated valve controls discharge from it by gravity directly into the fan chute. Electric heat applied both to the valve and the bucket bottom enables the asphalt to flow freely and the valve to operate easily. A 500-pound Kron scale with a 30-inch dial measures the asphalt charge for each batch.

To insure positive control of dust, Los Angeles specified the use of a cyclone and a multiclone in conjunction with a spray chamber and settling tank. The cyclone removes probably 75% of the solids, the multiclone another 15%, and the spray chamber 9.9%. The system will handle 30,000 cubic feet per minute of combustion gases and dust-laden air when adjusted to a temperature of 350°F.

The cyclone is 14 feet in diameter and of conventional design. Dust-laden gases pass through it and then enter the multiclone for further precipitation. The multiclone, made by the Western Precipitation Corporation, contains fifty-four tubes 9 inches in diameter. Gases leaving the unit are picked up by a Sturdevant #80 Planovane Exhauster fan through a 42-inch duct and driven to the spray chamber and settling tank for final precipitation of the solids.

The spray chamber is 10 feet by 10 feet and 40 feet high. Dust-laden water from the chamber flows into a concrete settling tank and after settling is recirculated.

The dust collected by the cyclone and multiclone goes to a separate 3-ton storage bin and then to an aggregate weigh-box where it can be used separately for a particular mix. This varies from the usual practice of conveying the dust back to the boot of the hot elevator, where it eventually enters the sand bin. It also effects a savings in asphalt, since excessive amounts of fines in the sand fraction require additional asphalt for a proper mix.

The plant stores 200 tons of asphalt in twin storage vats located below ground. The vats hold more than four tank cars of asphalt and hold it at 250-300°F. by thermostatically controlled electric heaters. Electric heating eliminates the usual steam boiler and needs one fireman instead of three.

The plant was designed and specifications written under the supervision of H. P. Cortelyou, Engineer-Director of the Bureau of Maintenance and Sanitation Department, and L. Miller, General Superintendent of Street Maintenance. F. Sandusky, Superintendent of Asphalt Plants and Transportation, was in direct charge of construction. Louis Graham, Electrical Foreman for the city, designed and supervised the installation of all electrical equipment.

FWA's Advance Planning Program Stimulates Local Public Works

By HARRY HEWES

WHEN on June 30th the Federal Works Agency's Advance Planning Program expired with its parent, the War Mobilization and Reconversion Act of 1944, 9,647 applications for assistance in the planning of state and local public works, to cost an estimated $3,454,599,813, had passed into the office of FWA's Bureau of Community Facilities in approximately two years. Advances aggregating $94,651,189 had been asked for. Congress had appropriated $65,000,000.

Of the 9,647 applications for repayable advances to bring plans and specifications to contract bidding point, 7,338 proposed public works had been approved in aggregate advances of $61,669,079 for projects to cost an estimated $2,351,460,730. The plans for 2,046 of these projects had been brought to a point where bids may be advertised; time required to complete them averaged 18.6 months. There remained under review 2,309 applications for projects to cost $1,103,139,083.

These figures are in the report made to Major General Philip B. Fleming, Federal Works Administrator, by Commissioner George H. Field of the Bureau of Community Facilities. It covers a program which has been called "the most important approach to the problem of public construction so far made in the United States."

The estimated cost of proposed public works for which advances for plan preparation have been approved, by type of work, appears at the bottom of the facing page.

Under the terms of the act, funds for planning preparation were to be returned when construction was started; 231 of these advances amounting to $788,050 had been repaid into the U. S. Treasury by June 30. These repayments indicated the work was in progress, although emphasis has rested on the reserve nature of the program — the preparation of a reserve sufficient in volume to help stabilize the construction industry as private construction needs, particularly housing, diminish.

On the other hand, the pent-up need of public facilities, delayed during the war years, is great and pressing in many communities. It amounts to a five- or six-year backlog of work vitally needed to protect health and serve public convenience. It has been estimated that, to compensate for war-time de-

Location	Type	Amount of Repayment	Federal Planning Project Cost
ALABAMA			
Andalusia	Sewer system additions	$ 1,578	$ 72,000
Bessemer	Garbage incinerator	1,250	75,000
Bessemer	Water service lines	3,500	150,000
Brewton	Sanitary sewers	7,652	413,893
Brewton	Water facilities	1,473	79,501
Fort Payne	Sewer system	4,780	140,797
Gadsden	Sewer system	2,125	227,915
Geneva	Water system	1,250	131,839
Jemison	Water system	1,246	36,500
Lafayette	Waterworks improvements	2,000	70,126
Mountain Brook	Streets	6,250	389,000
Ragland	Gas distribution system	1,215	35,000
Sylacauga	Water system	3,140	149,842
Sylacauga	Gas distribution system	16,365	625,000
ARIZONA			
Phoenix	Elementary school	1,200	84,682
Phoenix	Disposal plant additions	10,000	730,000
Phoenix	Water system additions	34,500	1,595,224
Williams	Water facilities	2,232	314,298
ARKANSAS			
Benton	Sewer extensions, disposal plant	2,175	140,000
Benton	Water system improvements	1,800	112,000
Clarendon	Water and sewer system extensions	1,925	101,000
Fayetteville	Disposal plant additions	1,913	131,540
Malvern	Water facilities	4,950	225,400
Malvern	Sewer facilities	1,250	50,250
Mena	Water facilities	3,625	161,900
Van Buren	Storm sewer	1,308	51,397
Van Buren	Sanitary sewers	838	13,921
CALIFORNIA			
Berkeley	Street improvements	520	189,261
Berkeley	Sewers—outfall lines	415	160,000
Berkeley	Sanitary sewer extensions	393	123,374
Muscoy	School addition	2,600	60,025
Paso Robles	School additions	640	70,000
Pomona	School facilities	7,700	937,400
Reedley	Elementary school	3,700	126,490
COLORADO			
Greeley	Water facilities	7,000	236,900
Lafayette	Water facilities	2,500	103,532
FLORIDA			
Dania	Water system extensions	5,360	208,500
DeLand	Water facilities	4,225	102,125
Fort Myers	Water facilities	5,150	308,000
Gainesville	Water treatment plant	7,500	382,352
GEORGIA			
Albany	Sewer system	4,500	752,648
Atlanta	Research building additions, University System of Georgia	2,800	150,000
Cobb County	Water facilities	4,751	210,105
Cobb County	Water facilities	1,596	60,838
Decatur	Sewer system	2,340	130,000
Manchester	Water facilities	4,000	97,269
Monticello	Water facilities	1,285	99,200
Vienna	Water system	2,690	93,790
IDAHO			
Moscow	School additions	1,375	75,483
ILLINOIS			
LaHarpe	Water facilities	426	68,700
Ridgeway	Sewer system, disposal plant	812	84,000
Robinson	Streets	1,400	77,700
Rockton	Water system additions	1,528	57,619
Salem	Water and sewer additions	1,750	200,000
IOWA			
Grimes	Water system additions	600	20,000
KANSAS			
Arkansas City	Hospital facilities	6,600	344,620
Greenleaf	Sewer facilities	300	81,000
Hays	Streets	3,046	215,000
Hoisington	Sewer facilities	3,556	103,000
Holyrood	Sewer facilities	2,080	60,700
Likin	Water system extension	950	52,550
Likin	Sewer system extension	300	17,600
Little River	Sewer system, disposal plant	2,706	75,998
Miltonvale	Sewer system, treatment plant	1,600	88,000
Oakley	Sewer facilities	1,040	40,700
Oberlin	Sewer extensions	600	19,900
Silver Lake	Water system	485	26,600
KENTUCKY			
Owensboro	Fire station and jail	850	55,200
Russellville	Water supply, storage and pumping station	2,000	122,000
LOUISIANA			
Abbeville	Wharf and warehouse	2,600	69,844
Carencro	Gas and water facilities	2,531	68,890
Columbia	Streets	1,353	74,427
Columbia	Sewer facilities	225	12,386
Hammond	Fire station and jail	527	38,607
Jonesville	Sewer facilities	2,640	70,620
Kentwood	Water supply	122	7,805
New Iberia	Street	2,080	79,269
New Roads	Gas facilities	7,064	248,511
Ponchatoula	Storm drainage	345	25,366
Ponchatoula	Streets	648	47,520
St. Bernard Parish	Sewer facilities	7,871	382,532
State Park Commission	St. Martinsville Park	191	15,446
MASSACHUSETTS			
Franklin	Sewage disposal plant improvement	1,000	59,000
Franklin	Sanitary sewers	3,200	146,000
Marlborough	Treatment plant additions	8,500	225,200
Wenham	Water system	5,500	345,881
MICHIGAN			
Allen Park	Elementary school	2,250	111,000
Battle Creek Twp.	Water supply, mains	8,180	282,778
Houghton	Dormitory additions, Michigan College of Mining	9,900	390,000
Plymouth	High school unit	3,112	301,156

Location	Type	Amount of Repayment	Federal Planning Project Cost
MINNESOTA			
Grand Rapids	School addition	660	45,950
Preston	Sewage collection system	1,050	45,000
Waldorf	Sewer system, treatment plant	1,000	44,450
Young America	Water system	925	39,200
MISSISSIPPI			
Ackerman	Streets	1,370	67,000
Decatur	School	1,116	66,570
Jackson County	Nurses' home	525	14,839
MISSOURI			
Clay County	Grade school	1,350	84,030
Clayton	Court house	14,400	1,649,400
Columbia	Storm sewer	6,450	600,000
Kirksville	Two treatment plants	4,000	275,000
Lilbourn	Water facilities	3,300	70,000
Malden	Electric power plant	2,100	93,000
Sullivan	Water facilities	3,535	188,419
NEVADA			
Fallon	School addition	7,140	185,500
Sparks	Municipal garage	440	33,450
Sparks	Sewer facilities	1,354	67,905
NEW JERSEY			
Upper Deerfield	Elementary school addition	3,060	93,600
Watchung	Elementary school	4,320	120,000
NORTH CAROLINA			
Fayetteville	Water facilities—spillway dam and discharge channel at reservoir	450	32,000
Franklin	Water system additions	1,066	62,084
Franklin	Sanitary sewer extensions	406	20,695
Norwood	Water system	1,900	107,555
Norwood	Sanitary sewers and treatment plant	1,600	94,575
Roanoke Rapids	Water system extension	3,863	105,000
Roanoke Rapids	Sanitary sewer extensions	3,393	92,000
Salisbury	Filtration plant and elevated storage	836	41,446
OHIO			
Euclid	High school	25,000	3,000,000
Lakewood	High schoo addition	7,200	800,000
Maple Heights	Elementary school addition	6,750	217,726
Newark	Intercepting sewers and treatment plant	4,308	565,800
Vermilion	Water treatment plant	730	51,562
Wooster	Senior high school, elementary school	4,160	497,000
OKLAHOMA			
Chickasha	Sewer facilities	1,500	150,000
Clarimore	Disposal plant	2,137	141,365
Clarimore	Wate facilities	5,555	248,000
Clarimore	School addition	2,316	125,620
Guymon	Sewer facilities	2,000	103,000
Macalester	Drainage	11,444	409,912
Muskogee	Sewer facilities	9,077	317,000
Muskogee	New force mains	8,000	500,000
Muskogee	Treatment and pumping plant additions	9,000	530,000
Norman	Classroom building, University of Oklahoma	6,114	400,000
Norman	Petroleum engineering unit, University of Oklahoma	5,250	350,000
Oklahoma City	Sewer facilities	12,500	1,077,142
Oklahoma City	Sewage treatment plant	10,687	965,000
Oklahoma City	Sewage treatment plant	10,000	2,774,000
Temple	New water supply	2,150	59,974
Tulsa	Water facilities	3,750	300,000
Tulsa	Water facilities	1,875	150,000
Tulsa	Water facilities	4,475	470,000
Wagoner	Treatment plant	3,450	89,769
OREGON			
Oregon City	Elementary school	2,076	110,778
SOUTH CAROLINA			
Cheraw	Water facilities	1,062	60,000
Kingstree	Water system extensions	600	26,500
Myrtle Beach	Water system	1,075	116,300
Newberry	Water plant additions	1,805	126,000
Prosperity	Sewer facilities	1,375	72,551
Spartanburg	Waterworks improvement; 3 MG steel reservoir and 20.29 miles distribution line	2,700	482,500
SOUTH DAKOTA			
Faith	Water supply system filtration plant	1,250	55,000
Yankton	Park	3,450	138,265
TENNESSEE			
Cookeville	New impounding dam, filter plant, elevated tank	6,250	365,750
Knoxville	Dormitory, University of Tennessee	19,989	1,589,000
Jackson	Sewer facilities	2,625	263,486
Jackson	Water facilities	8,000	547,456
TEXAS			
Alamo Heigats	Street	3,666	250,073
Alamo Heights	Sanitary sewer extensions	161	10,421
Amarillo	Sewer facilities extension, outfall line	11,750	1,088,500
Amarillo	Park	2,625	159,000
Ballinger	Water facilities	5,737	398,000
Baytown	Water facilities	3,728	130,000
Brennam	Sewer facilities	841	64,159
Brenham	Street	3,133	350,402
Carthage	Water facilities	2,210	134,578
Cartnage	Sewer facilities	2,096	146,646
Carthage	Street	1,162	59,350
Commerce	Two dormitory buildings R s Texas State Teachers College	11,250	600,000
Crosbyton	Sanitary sewer extension	287	25,000
Crosbyton	Water sup ly line	252	22,000
Decatur	Sewer facilities	1,075	50,000
Edna	Elementary school additions	570	59,360
Galena Park	Sewer and water facilities	1,055	60,071
Harlingen	School facilities	2,755	178,580
Jefferson County	Drainage facilities	7,500	350,000
Lamb County	Roads	2,880	102,000
Littlefield	Sewer facilities	787	69,000
Littlefield	Water facilities	300	29,250
Munday	Street	4,400	180,000
Pelly	Street	8,000	257,000
Pelly	Sewer and water facilities	2,000	109,000
Port Neches	High school	9,000	850,000
Raymondville	Water facilities	2,700	180,243
Raymondville	Sewer facilities	1,375	86,396
Rosenberg	Sewer and water facilities	3,850	219,329
Rosenberg	Park	875	49,878
Rosenberg	Street	1,025	56,122
Rocksprings	Street	3,012	85,000
San Marcos	Dormitory building, Southwest Texas State Teachers College	2,250	250,750
San Marcos	Dormitory building, Southwest Texas State Teachers College	1,000	71,000
Texas City	School facilities	10,425	750,000
Texas City	Storm sewer	3,450	390,400
Tyler	School facilities	6,255	437,850
Tyler	School facilities	5,550	400,000
Sweeny	Sewer and water facilities	5,350	190,427
West University Place	Street	8,300	408,900
UTAH			
Richfield	Reservoir, pump house, mains	1,066	58,372
WASHINGTON			
Yelm	City hall	700	17,694
WISCONSIN			
Fall Creek	Water system	900	72,000
Poynette	School additions	750	42,100

ficiencies, $5,000,000,000 a year should be invested in public works.

General Fleming reminded a Senate committee on July 11, during consideration of the measure introduced by Senator Green (R. I.) that would provide for the resumption of the advance planning program during the next five years, that no federal grants had been made in assistance to this planning.

Instead [he said] repayable advances have been made, and we thoroughly expect to get our money back. The legislation specifically disclaimed any intention on the part of Congress to participate in the financing of the actual construction, and this is well understood by the participating governmental bodies. No advances were made unless we were positively assured the local resources were sufficient to pay for the project and that construction could be begun within four years.

If the planning program is not resumed for lack of further support, it will go down in history as an experiment noble in purpose, and nobly begun, which for lack of imagination and foresight was killed before its maximum benefits could be realized. I think that would be a tragic mistake, for I have as yet met no one who really understands the program who is opposed to it.

Of those projects for which planning advances already have been repaid, the average is $3,540 for a total work cost of $233,045. These projects now in construction stage are largely in the south, where a residual manpower source remained after the heavy wartime population influx and where labor costs are slightly lower.

ESTIMATED COST OF PROPOSED PUBLIC WORKS

Type of Work	No. of Applications	Total	Construction	Advance for Planning
Highways, Roads and Streets	456	$ 77,253,954	$ 67,594,619	$ 2,168,464
Bridges, Viaducts & Grade Separations	62	73,657,916	62,917,252	1,115,132
Airports	56	35,088,604	27,793,840	847,020
Sewer, Water & Sanitation Facilities	3,457	1,000,649,741	860,983,163	23,613,254
Schools & Other Educational Facilities	2,206	592,132,200	503,555,930	18,973,580
Hospitals & Health Facilities	225	133,923,098	107,743,077	3,914,747
Other Public Buildings	533	235,718,731	189,883,144	6,685,750
Parks & Other Recreation Facilities	244	67,224,645	57,596,227	1,774,077
Miscellaneous Public Facilities (Nec.)	99	144,811,841	101,132,866	2,577,055

Assessment Policies in a Housing Shortage

By ALBERT W. NOONAN
Executive Director
National Association of Assessing Officers

THE Advisory Council of the National Association of Assessing Officers evolved a six-point declaration of policy in 1945 which, it seems to me, still represents a good statement of the weight which should be given by assessors to current real estate prices in determining value for assessment purposes. In this short statement were condensed nearly all the arguments and discussions that have taken place during the past ten years with regard to this matter. It reads as follows:

1. There has been a substantial general increase in real estate values during the war period;

2. Such increase varies materially among the different states of the nation, among different sections of any particular state, and among classes of property within a particular assessment jurisdiction;

3. In general the type of property where increases have been greatest have been residential units, especially among medium and low-priced groups;

4. In most recent sales of small residential properties there usually has been included an amount that might be called "premium for immediate occupancy," or "bonus for shelter," which should not be considered as a reflection of the value of the property;

5. Increases in value which may be traced to increases in the cost of labor or material are likely to remain, as there are no prospects that labor or material costs will decline in the near future;

6. Assessing officers who believe that assessments in their jurisdiction should be increased should not exceed as an upper limit the reproduction cost new, even where this is substantially below the price at which the property recently sold.

Reproduction Cost Criteria

Because of the unstable market conditions we are experiencing today, we are almost compelled to gear assessed valuations to the reproduction cost indicator rather than to the sales price factor. It is true, of course, that there has been no change in the legal standard of value; it continues to be the "market" value. Nevertheless, there is almost a complete absence of the "willing buyer" in the "willing buyer-willing seller" combination. In other words, what we have today are willing sellers and "desperate" buyers, but this concept does not square with the standard-of-value concept which has received widespread judicial blessing. It is for that reason that I believe most assessors will have to drop back to the replacement cost standard, for this at least offers much more concrete evidence and provides a more stable foundation in the assessment of real estate.

Note that, in the statement, a big distinction has been drawn between the increase in sales prices traceable to the desperation of the buyer and to those which have resulted from increases in labor and material prices. The first is expected to be of brief duration, while the second is considered to be relatively permanent. That is why it was suggested that the first be disregarded and the second be accepted as one of the criteria of value. There is much evidence to support the contention that, at least for the next few years, increases in material and labor costs are likely to be permanent and even move to higher levels.

It seems clear to me that, because of the existing housing shortage and the fact that it is going to continue for at least a few more years, there will be a continuing scarcity both in residential and non-residential real estate. Because the shortage will exist, the demand will exist, and the price level will be determined largely by the amount of money permitted to meet the demand.

The pressure for lower interest rates on federal securities probably will continue, and it is equally true that if the interest rate on federal securities is hammered down the interest rate on other types of securities probably will follow along. After all, interest rates on other forms of investment are geared to the basic rate—which is the rate determined by federal securities. Of course, as assessors, we know that, as interest rates go down, a given net income will be capitalized into a higher capital value. In other words, the lowering of interest rates tends to push values to higher levels.

A Case Application

Let us apply Point 6 to a concrete situation. For example, let us assume that a house has a reproduction cost new, less depreciation, of $4,000. It is located on a lot with a generally accepted value of $500, thus indicating a fair replacement cost of the entire parcel at $4,500. In other words, if building materials and labor could be secured at ceiling prices, the house could be reproduced for that sum. In the meantime, a family desperately in need of housing agrees to pay $7,000 or even more for the house and lot, provided it can occupy it immediately. The Advisory Council's statement says that this place should be assessed for not more than $4,500. Now it could well be argued that this is not sound economic doctrine. Whether it is good or bad economics, it seems to contain a lot of administrative common sense and, I think, has a substantial amount of justice.

Additional Community Costs

I should like to add one concluding thought, however. The cost of providing the services which municipalities are required to provide has increased sharply during the war years, and especially since the war ended. This situation is widespread. It is due not only to demands for new services, but to increases in salaries and wages of employes, and the sharp rise in the cost of materials and supplies. The same economic forces that have caused increased expenses have likewise caused the market value of property to rise. If on the one hand we pay increased prices for goods and services, while at the same time assessed values are permitted to lag far behind them through an excess of caution, a considerable amount of financial embarrassment to a great many municipalities seems quite probable.

Massachusetts Permits Bypassing of Outdated Local Building Codes

ANTIQUATED local building codes in Massachusetts now can be bypassed on a state-wide basis as a result of a recent enactment by the legislature which was sponsored and proposed by the Housing Association of Metropolitan Boston.

The Board of Standards of the State Department of Public Safety is given the power to issue regulations about alternative materials and types and methods of construction to be permissible in any city or town regardless of the local building code provisions. As the regulations will be valid throughout the state, the building industry is able to modernize its merchandising as well as its production methods. Lowered housing costs are expected as a result of the anticipated increase in amount and kinds of materials used, combined with the green light given to prefabricators.

Norris, Tenn., To Be Sold by TVA

Famous planned community awaits disposal in 1948.

THE planned community of Norris, Tenn., will be disposed of by the Tennessee Valley Authority within the next year or so. The TVA, through the Management Advisory Committee of Norris, is requesting the aid of local citizens in developing a sales plan which will cause minimum disruption and assure the future of the town as a normal community. TVA representatives have said they are convinced these objectives can be accomplished if the citizens of Norris and the TVA jointly attack the problem with the determination to solve it with complete frankness, patience, and goodwill.

In accordance with the requirements of the TVA Act, disposition of the Norris properties must be made at public auction. Two plans will be explored: the sale at public auction of the town as a single unit; or the sale of houses and lots at public auction to individuals, including some 150 lots suitable for private residential development.

The Town of Norris was built in 1933-35 mainly to house construction workers on Norris Dam, located some four miles, by way of road, from the center of the town. Norris was developed as a permanent community, however, to serve as a laboratory, office, and service center for continued TVA operations. It now contains 336 family dwelling units, one residential dormitory, an administration building, a fire house, a telephone exchange, a post office, a combined elementary school and high school operated by Anderson County; a grocery, a drugstore, a creamery, a barber shop, a beauty parlor, and a gasoline station, all privately operated; the TVA Hydraulic Laboratory; offices of the TVA Forestry Department; research laboratories of the U. S. Bureau of Mines, and a number of temporary construction buildings remodeled for community uses, together with related roads and utilities.

How Norris Was Planned

Norris was an early demonstration of the advantages of unified planning and development for small urban communities. A conscientious effort was made to smooth out and eliminate, where practicable and without wasting money on frills, some of the haphazard crudeness of the typical small town.

Home-building lots average about 75 by 200 feet in size, or about one-third of an acre. A protective green belt of some 2,000 acres surrounds Norris and has been an effective barrier against outside influences detrimental to the continuing unity of the town. The roadways are molded into the natural contours of the ground, and cul-de-sac or dead-end streets have been used, wherever feasible, to prevent through traffic on residential streets. Instead of an expensive sidewalk system, improved paths, independent of the roadways in most cases, lead through the residential blocks, enabling pedestrians to reach any destination quickly and safely.

TVA officials say that it has always been the intention of TVA to dispose of the Town of Norris and to assist in the establishment of a local government as soon as the initial program requirements of TVA had been met. Before the war, studies were inaugurated for the disposition of the town. But with wartime demands for housing on the part of TVA employes engaged in the defense and war programs, and Army and civilian personnel engaged in the construction of the atomic bomb plant at Oak Ridge (approximately one-third of the Norris residents), plans for the disposal of the town were deferred until the end of hostilities.

Left: Single-family dwellings in the Town of Norris, Tenn. Right: Public school in the Town of Norris, Tenn.

The Gas Tax Injustice

Public Roads Administration data show that at least half the state gas-tax funds comes from vehicles using city streets, but less than 5% of the money finds its way into street construction and maintenance programs.

PERIODICALLY someone raises his voice protesting that city streets do most of the work of raising gas-tax funds but get little of the financial return. A recent study by the Public Roads Administration (Table G-3, 1945) gives data that show, among other things, how great this discrimination is. Although city streets carry more than half the motor-vehicle traffic, they receive roughly 4½% of the state motor fuel tax to maintain this important network of trafficways. The figures for 1945, the last year in which a survey was conducted, appear at the right.

Many Vehicles Remain on City Streets

At the same time approximately 52½% of the cars, trucks, buses, and other vehicles in operation and using the gasoline that supplies these funds have never left the city streets. For 1945, discounting vehicles owned by the military services, these figures were as follows:

		Travel in Million Vehicle-Miles
Passenger Cars (including Taxicabs)	Rural Travel	90,131
	Urban Travel	109,054
	Total	199,185
All Buses	Rural Travel	1,903
	Urban Travel	1,929
	Total	3,832
Trucks and Combinations	Rural Travel	27,149
	Urban Travel	18,760
	Total	45,909
All Motor Vehicles	Rural Travel	119,183
	Urban Travel	129,743
	Total	248,926

These figures were reported by G. P. St. Clair, Chief of the Division of Financial and Administrative Research for the Public Roads Administration. The figures representing the years before the war are somewhat greater, but are in substantially the same proportion as those of 1945.

It is only fair, when studying this, to recognize that in certain instances the states and the counties spend large sums of money within cities on extensions of through routes, the most costly type of work. Since many states do not segregate urban and rural expenditures, it is difficult to determine the full amount. In 1945, twenty states reported urban expenditures amounting to $14,049,000. One also should recognize that primarily these urban developments are for the purpose of furthering state highway systems, and only secondarily are the needs of the entire city considered.

We also should recognize that certain amounts of road-user funds are transferred by the states to the counties and later to the cities and towns. However, while acknowledging their existence, we must at the same time recognize that the amount so transferred is small in comparison to the amount that the cities earn and have a right to receive.

Many states allow rebates in gasoline taxes to those who do not use the gasoline for highway purposes. The fact that certain states make at least a token payment to cities for mileage that is driven on city streets shows that at least these states recognize that an obligation exists. Factual presentation of these data to the various state legislatures should make the practice universal and on a scope that should be of great enough volume to be useful.

State	Net Total Funds Distributed, in $1,000	Total For State Highway Purposes, in $1,000	For Local Roads and Streets: County and Local Roads, in $1,000	For Local Roads and Streets: City Streets, in $1,000	For Local Roads and Streets: Service of Local Highway Obligations, in $1,000	For Local Roads and Streets: Total, in $1,000	Total For Non-Highway Purposes, in $1,000
Alabama	$ 17,259	$ 8,341	$ 8,762	$ 63	....	$ 8,825	....
Arizona	5,177	3,533	1,553	....	....	1,553	....
Arkansas	12,731	10,507	1,524	....	$ 302	1,826	....
California	47,004	30,807	12,870	$ 3,059	....	15,929	....
Colorado	7,530	5,442	1,962	....	....	1,962	....
Connecticut	7,918	7,868	....	....	....	....	....
Delaware	1,887	1,728	....	....	....	....	$ 150
Florida	25,981	15,270	6,174	....	....	6,174	4,297
Georgia	23,204	15,430	4,713	....	....	4,713	2,952
Idaho	5,369	4,351	1,000	....	....	1,000	....
Illinois	32,137	10,262	9,453	9,278	563	19,294	2,117
Indiana	23,073	11,608	8,707	2,141	....	10,848	451
Iowa	11,948	6,159	5,639	....	....	5,639	....
Kansas	9,036	6,323	2,318	....	....	2,318	....
Kentucky	13,701	12,041	1,615	....	....	1,615	....
Louisiana	19,294	18,915	194	....	....	194	....
Maine	4,987	4,774	193	....	....	193	....
Maryland	10,458	4,734	2,404	3,219	76	5,699	....
Massachusetts	15,343	8,529	6,434	74	....	6,508	215
Michigan	26,088	18,588	6,759	....	....	6,750	....
Minnesota	16,017	10,556	5,278	....	....	5,278	12
Mississippi	12,540	7,204	5,162	....	....	5,162	....
Missouri	10,511	10,397	1	....	....	....	19
Montana	4,440	4,408	....	....	....	....	....
Nebraska	11,971	5,819	3,143	348	....	3,491	2,421
Nevada	1,446	1,409	....	....	....	....	....
New Hampshire	2,715	2,352	251	....	112	363	....
New Jersey	17,387	3,379	3,921	....	958	4,879	8,816
New Mexico	4,770	4,627	....	....	....	....	....
New York	49,404	37,524	10,613	1,182	....	11,795	....
North Carolina	26,824	25,508	....	....	....	....	1,241
North Dakota	2,961	2,112	698	....	....	698	....
Ohio	44,303	22,252	8,179	6,135	....	14,314	7,593
Oklahoma	21,374	13,793	4,167	600	....	4,767	2,370
Oregon	11,313	9,171	1,570	522	....	2,092	....
Pennsylvania	47,679	33,375	7,799	....	....	7,799	6,271
Rhode Island	2,967	1,766	28	....	....	28	1,160
South Carolina	13,287	10,849	2,161	....	....	2,161	253
South Dakota	4,002	3,390	484	....	....	484	....
Tennessee	23,331	9,427	6,585	....	....	6,585	6,846
Texas	45,262	32,637	779	....	....	779	11,139
Utah	4,279	4,236	....	....	....	....	....
Vermont	2,130	953	821	....	340	1,161	12
Virginia	18,367	18,036	294	....	....	294	....
Washington	17,287	7,144	7,512	2,532	....	10,044	....
West Virginia	8,849	8,849	....	....	....	....	....
Wisconsin	23,334	14,865	5,205	818	....	6,023	2,188
Wyoming	1,716	1,284	398	24	....	422	....
District of Columbia	3,166	....	....	3,158	....	3,158	....
TOTAL	$773,817	$512,543	$157,314	$33,153	$2,351	$192,818	$60,523

Widened Streets Relieve Bottleneck

BOTTLENECKED travel in Indianapolis is getting some relief through a street-widening program that is adding 8 feet on each side of the important Tenth Street artery between Fort Wayne and Massachusetts Avenues, making it 40 feet wide in all. The 8-foot slabs are being constructed of 8-inch concrete made with air-entraining cement. Expansion joints are being installed at the radius points in each block and contraction joints at 20-foot intervals. The concrete uses air-entraining cement to improve the weathering qualities.

The project is being built by the City of Indianapolis out of its thoroughfare fund, which accumulates at the rate of about $165,000 per year as a result of a tax levy of 3 cents per $100 of taxable property. The cost of the project is about $40,000.00. Tom Jacobi, City Engineer, is representing Indianapolis' interests, with G. E. Schmitz, Street Engineer, in direct charge.

Other widening projects contemplated for initiation in 1947 are as follows:

Broad Ripple Ave., south side only from Winthrop to Primrose	$30,000
Noble St., from Michigan to Washington	80,000
College Ave., jog elimination at intersection with Massachusetts Avenue	30,000
Harding St., from 29th to 30th, and 30th from Capitol to Graceland, incident to establishment of one-way traffic; 29th St. and 30th	30,000
Davidson St., from Washington to Market	12,000
Meridian St., from 16th to Fall Creek,—sidewalks incident to State Highway Commission widening and reconstruction	32,000
Total	$214,000

The State Highway project, in which the State and the Federal Government participate equally, contemplates a completely new concrete pavement, 56 feet in width, at an estimated cost of over $200,000. The Chief Engineer for the Highway Commission is Carl Vogelgesang, and the Engineer of Roads for the Highway Commission is James T. Hallett.

Also being contemplated by the city as an initial step in the widening of Morris St., is the section from Meridian to Kentucky Ave., at an estimated cost in excess of $300,000. This construction would also mean making the new pavement 56 feet in width as compared to existing widths varying from 24½ feet to 32 feet.

Grade separation and widening have been vigorously promoted by General Robert H. Tyndall, Mayor of Indianapolis.

The master plan for widening and grade separation was developed during this period under the supervision of Noble P. Hollister, Engineer-Director of the Plan Commission.

Top: This old steam-powered skimmer shovel scoops a concrete sidewalk to excavate for the 8-foot widened section. Center: The subgrade is ready for forming and the existing curb to be knocked off. Bottom: This is the way the widened slab looks. Still remaining is the asphalt repair on the side street and the curb to be placed on the parking side.

Provisions of the New Sales Tax in Buffalo and Erie County, N. Y.

By JOHN S. RYAN, *Counsel*
Erie County, Sales Tax Department
Buffalo, N. Y.

CHAPTER 278 of the New York State Laws of 1947 authorizes counties to provide additional revenues for school purposes by levying one or more of six types of taxes. These are: (1) a retail sales tax, (2) a restaurant tax, (3) a tax on the retail licenses of the State Liquor Authority, (4) an admissions tax, (5) a vending machine tax, and (6) a tax on the use of motor vehicles.

Tax of 1% Adopted

After an exhaustive study of estimated revenues from each of these taxes, the Finance Committee of the County Board of Supervisors recommended and the Board adopted — effective July 1, 1947 — a tax of 1% on the receipts from the retail sales of tangible personal property. Estimated annual revenue totals $4,000,000, all of which is mandated by the state law to be turned back to the school districts of Buffalo and the rest of the county, based on the average daily attendance for the preceding school year.

Exemptions from the Tax

Certain types of tangible personal property are exempted from the sales tax under the terms of the state enabling act. These include: food and food products specified in said act when sold for human consumption; water when delivered to the consumer through mains and pipes; drugs, medicines, and eyeglasses sold upon a physician's prescription; beer and other similar malt beverages; newspapers, periodicals, and cigarettes. *Not exempt* are candy and confectionery; food and food products when sold for other than human consumption; soft drinks, sodas, and other beverages such as are ordinarily dispensed at bars and soda fountains. In short, every other type of tangible personal property is subject to this tax.

Retail Sale

The Board of Supervisors has defined the word "retail sale" as "every sale" of tangible personal property to any person for any purpose other than (1) for resale in the form of tangible personal property; (2) for incorporation as a material, or a part into, or for use or consumption directly and exclusively in the production of tangible personal property to be produced for sale by manufacturing, processing, assembling, refining, or mining; or (3) a sale for the use or consumption directly and exclusively in the production of crude oil or natural gas or in farming, agriculture, horticulture, or floriculture. The express purpose, of course, was to prevent the pyramiding of tax which would result from the taxation of materials which are used or consumed in producing property which would eventually be subject to tax in its retail sale.

To Avoid Tokens or Stamps

While retailers are required by law to collect the tax, the Erie County Sales Tax Act also requires that this tax must be passed on to the ultimate consumer of the property. To avoid splitting the penny and necessitating the use of tokens or stamps, sales from 1 to 24 cents are not taxable; on sales from 25 cents to $1.39 the vendor will collect 1 cent; from $1.40 to $2.39, 2 cents, and on each additional dollar 1 cent tax. While the vendor will not collect a tax on sales of less than 24 cents, the amount of those sales will be included in the gross receipts of the vendor and will be taken into consideration by him in arriving at the 1% gross sales tax. However, the schedule has been prepared from experience in other jurisdictions and results in approximately 1% of the tax collected. The vendor is required to turn over to the County of Erie any tax which he collects in excess of 1% of the tax collected. The vendor cannot enrich himself from the tax.

"Compensating Use Tax"

In addition to the sales tax, the Board of Supervisors has authorized what is known as a Compensating Use Tax. This requires those who purchase taxable property outside of the county, but who use the same within the county, to pay a tax on that use to the Director of the Erie County Sales Tax. However, sales within the county which are made and delivered for use outside the county are not subject to the sales tax or the compensating use tax.

Burden on Small Taxpayer Minimized

The Board of Supervisors felt that the retail sales tax, as enacted, was the fairest of all the new taxes which the county was authorized to impose. The Supervisors recognized, as we all must recognize, that the tax burden of real property had become overwhelming. The sales tax, with its exemptions of food, medicines, etc., they felt, would not be a burden on the small taxpayer. Without this tax, the increased cost of education hits the home owner in every school district, and the purpose of this tax is to take off his shoulders to a great extent the burden he is no longer able to bear.

County and Municipalities Levy Certain Taxes

The New York State Legislature, seeing the necessity of increased revenue to meet the increased cost of education, and following the principle of home rule that each county should determine for itself the manner in which it will raise its revenue, gave to the counties and the municipalities an option to levy certain taxes. The County of Erie has accepted that challenge and has promulgated this tax. It has done so in a statesmanlike manner, realizing that no tax is popular but also realizing that the revenue had to be collected. It is our hope and aspiration that when the 30th day of June 1948 rolls around, the twelve months' returns from this tax, allocated to the respective school districts of the county, will so adequately take care of the increased cost of education that the County of Erie will be recognized as having once more taken a forward step in the direction of good, sound government.

The foregoing article presents the substance of a talk by the author at the New York State Conference of Mayors and Other Municipal Officials, in Buffalo, June 17, 1947.

Cincinnati's Sewer Improvement

AT one time, Bloody Run Creek was a beautiful little stream running through the outskirts of Cincinnati, Ohio. It obtained its name back in 1794 when a party of four soldiers were ambushed by Indians and two were killed.

Today, the stream again runs red—now, because dye wastes from an industrial plant color the stream. Nor is the color confined to red. It varies through the entire spectrum from deep red through the yellows and greens to violet. The younger generation in the vicinity have named the stream Rainbow Creek because of its multicolored hues.

However, this stream, despite its interesting history, is being buried to make way for Cincinnati's urban development, and is being cased in a concrete conduit 15 feet wide and 10 feet high in a project being built jointly by the city and the county. The trunk sewer will give service to many new housing developments in the area. It will also provide service to certain proposed school improvements, enable the city to proceed with certain paving projects, and will provide an outlet for certain relief sewers.

The entire Bloody Run project will serve an area of 2,200 acres and will cost an estimated $1,700,000. Because of its multi-benefit nature both to the city and the county, an arrangement has been worked out wherein each agency has been allocated a portion for construction and finance.

The first contract has been awarded to the Foley Construction Company and involves the construction of 4,000 feet of reinforced concrete sewer. It will be second in size only to the 19½-foot Lick Run sewer built here in the early nineties. Construction is scheduled for completion at the end of this year.

How Bloody Run Creek, alias Rainbow Sewer because of its multicolored trade wastes, looked before being covered.

The proposed sewer will be covered for its entire length, therefore, no special provisions were made for expansion or contraction joints.

The sewer, located in a valley and on private property, will be subject subsequently to increased loads due to fills and surface structures, consequently, it was designed to meet these contingencies.

When contract No. 1 is extended, under subsequent contracts, this sewer will serve an existing industrial area and because of the unknown character of the future industrial waste, some thought was given to the merit of lining the conduit with vitrified liner plates, or special protective coating. After careful consideration, it was decided that the expense was not justified in view of local regulations which prohibit the discharge of corrosive wastes into the sewerage system. However, as low cost insurance against this remote occurrence, as well as to provide protection against erosion, an extra inch of concrete covering over the reinforcing steel was added. Normal mix 1:6 concrete is specified.

The city's portion of the work is under the direction of H. H. Kranz, City Engineer; A. B. Backherms, Principal Sewer Engineer, and T. J. Montgomery, Principal Construction Engineer.

WINTROATH PUMPS *for Municipalities*

The beginning and growth of every town and city depended upon the availability of a dependable water supply. In early days, settlements were necessarily located in the vicinity of surface water, such as rivers, lakes or springs. As the population increased and rapidly spread throughout the country, communities were formed in locations necessarily removed from such surface sources of water. This required that underground water supplies be developed by means of wells and pumping machinery. The intensive growth of the communities into large towns and cities led to the necessity for a dependable and economical water supply and made constantly increasing demands on pumping equipment.

Wintroath pumps, because of their leadership in mechanical and hydraulic improvements, together with high quality workmanship standards, have gained wide popularity in the field of municipal water supply.

Some of the communities using Wintroath pumps are:

California Cities: Los Angeles, Pasadena, Alhambra, Burbank, Long Beach, Lynwood, Altadena, Whittier, Monrovia, Bakersfield, Chowchilla, Tulare, and many other communities served by the Southern California Water Company and California Water Service Company. City of Covington, Oklahoma; City of Artesia, New Mexico; City of Canton, Ohio; City of Guelph, Canada; Tribune, Kansas; Westcliff, Colo.; City of Clovis, New Mexico; City of Weatherford, Texas; Garden City, Kansas.

WINTROATH PUMPS, INC.

1100 South Meridian Ave. Alhambra, California

"Wherever Water Needs a Lift"

Canadian Mayors' Conference Meets

Housing, municipal finance, planning, and public relations are emphasized at tenth annual meeting.

SOME three hundred delegates from all parts of Canada and several visiting mayors from the United States attended the Tenth Annual Conference of the Canadian Federation of Mayors and Municipalities in Winnipeg, Manitoba, July 8 to 11, where the pressing problems of housing and municipal financing in the Canadian cities were discussed and ways of solving them vigorously recommended. In addition to these subjects, town and regional planning, civic recreation, community health and welfare, and public relations were taken up by the conferees.

The Conference formally recognized, by adoption of a statement of its Housing Committee which was read by George B. Mooney, Consultant to the Federation, that a crisis in housing exists in Canada today and that "fully 45% of Canadian families cannot be provided modern shelter accommodation within the framework of existing legislation and financial facilities." Delegates voted to meet with Ottawa officials in an effort to solve the problem.

Earlier the Conference heard Major-General Hugh A. Young, Vice-president of the Central Mortgage and Housing Corporation, state that subsidized state or public housing will not be the sole responsibility of the Dominion Government, but rather that of the municipalities and the provinces.

The Conference also approved recommendations of its municipal finance committee that the Federal Government be told that unemployed relief, housing, and federal-enacted social welfare were the financial as well as the legislative responsibility of the Federal Government.

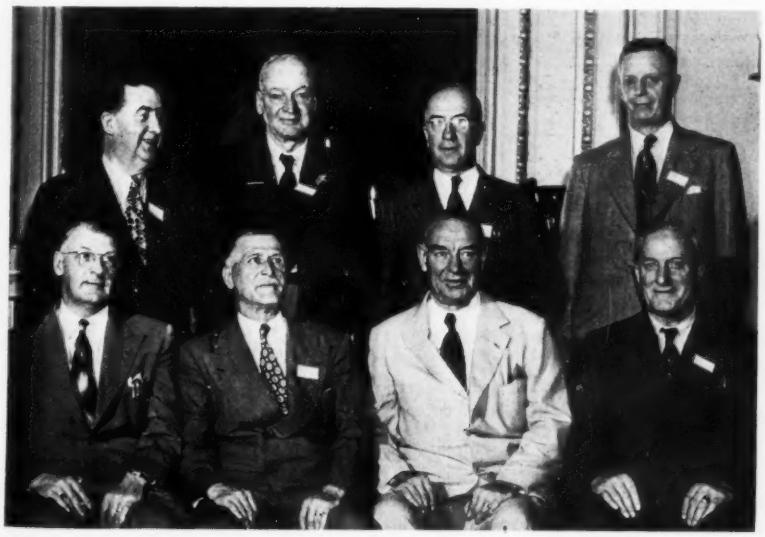
Housing Statement

The statement on housing also included these points:

Low-rent housing for low-wage income families—for whom no new housing whatsoever, for many years past, has been built in Canada—is our major need; but our unmet housing requirements are not confined to this group. Inflated building-material costs, the low productivity of labor, and the failure of the construction industry itself to rationalize and standardize its operations, have forced over-all construction costs to a point beyond the capacity of all but a fractional segment of the Canadian people to afford. Housing entrepreneurs find themselves unable to build residential accommodations either to sell or to rent at price ranges within the capacity of the majority of the Canadian people to pay.

To the end that a comprehensive national housing program aimed at housing all Canadian families in shelter accommodation of acceptable standards may be proceeded with, this Conference recommends:

1. That the Federal Government institute without delay a subsidized low-rental and purchase housing program along the lines incorporated in the report of the Sub-Committee of Housing and Planning of the Advisory Committee on Reconstruction; and that the facilities so provided be made available to private builders and entrepreneurs as well as to Government-sponsored projects.
2. That the Federal Government assume the responsibility for devising ways and means aimed at rationalizing the housing construction industry in Canada.
3. That the Executive Committee of the Federation be instructed to enter into negotiations immediately with the Federal Governmment and the responsible officials concerned and to keep on negotiating steadily until such time as a satisfactory housing policy has been agreed upon and implemented by the Federal Government.



Newly elected officers of the Canadian Federation of Mayors and Municipalities. Left to right, standing: Mayors G. C. MacLean, St. Boniface, Manitoba, Third Vice-president; Garnet Coulter, Winnipeg, Honorary President; A. W. MacPherson, Saskatoon, Saskatchewan, Honorary Secretary, and H. D. Ainlay, Edmonton, Alberta, Honorary Treasurer. Left to right, seated: Mayors A. J. Mason, Springhill, Nova Scotia, Fourth Vice-president, and Lucien Borne; Quebec, First Vice-president; Senator the Honourable G. C. McGreer Mayor, Vancouvr, British Columbia, Fifth Vice-president, and Mayor Sam Lawrence, Hamilton, Ontario, Second Vice-president.

Finance Recommendations

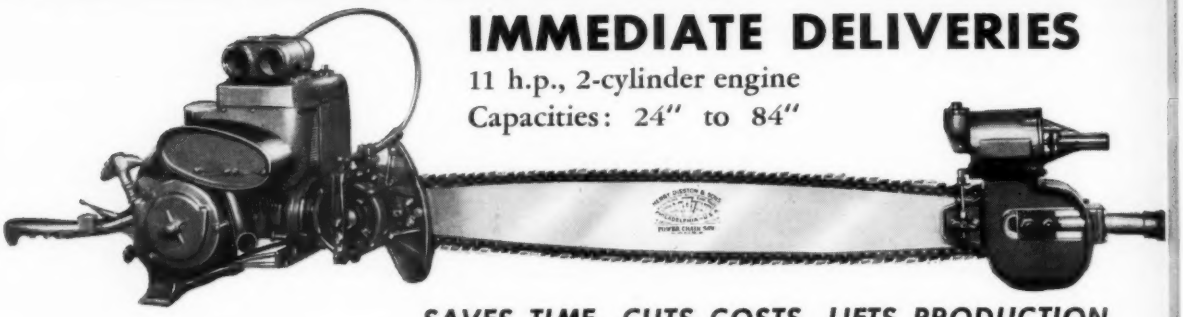
The Municipal Finance Committee's report recommended that provincial-municipal financial matters be referred to provincial unions of municipalities for further study and appropriate recommendations to provincial governments.

The Federation's Executive Committee was instructed to point out to the Federal Government that need for federal-municipal aid is as great today as when the municipal aid and adjustment act was passed and is likely to be even greater in the future. The report called for a government policy of federal-municipal aid.

The Finance Committee's report reaffirmed the long-standing position of the Federation that the Dominion Government should recognize the rights of municipal governments to direct access to the Federal Government, and that in matters pertaining to federal-municipal affairs municipalities should be negotiated with, both in policy framing and administration.

In the Conference discussions on municipal finance, several danger signs were pointed out by J. O. Asselin, Chairman, Executive Committee, City of Montreal. He warned that municipal finance administrators must be alert to what was called the probable high mortality of much of the high-cost residential and other property added to tax rolls in recent years; to the mounting cost of municipal payrolls; to the danger

DISSTON CHAIN SAW
with Mercury Gasoline Engine



IMMEDIATE DELIVERIES

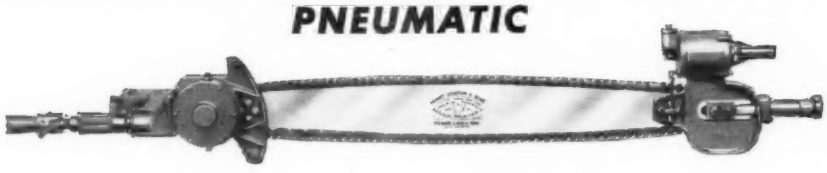
11 h.p., 2-cylinder engine
Capacities: 24" to 84"

SAVES TIME, CUTS COSTS, LIFTS PRODUCTION

The Disston Chain Saw is a self-contained, portable, gasoline powered saw that can be operated in all climates. It is ruggedly built, light in weight, easy to operate and cuts from all angles. It results in greater production and economy wherever heavy timbers are cut . . . in the forests; on railroads and contracting jobs; at shipyards and manufacturing plants of many kinds.

The engine, designed specially for chain saw operation, has more power per pound of weight than any other chain saw engine. It is manually controlled to utilize full engine power under all cutting conditions. Other features include: die-cast engine cylinders and cooling fan; gear driven magneto; fuel filter built in tank; air filter; positive acting multiple disc clutch; many others. And the tough, durable cutting chain gives perfect contact with drive sprocket under all load conditions.

DISSTON CHAIN SAW
PNEUMATIC



HUNDREDS OF APPLICATIONS

The Disston Chain Saw—Pneumatic—is a powerful, light weight, air-driven tool that speeds up timber cutting for general contractors, railroads, shipyards. Can be operated wherever compressed air is available, even under water. It requires no previous experience to operate, and is ready for work the instant connection is made with air supply.

Gear housing and saw mechanism may be rotated in either direction—handle grips remain in a horizontal position with relation to each other for any type of cutting. Equipped with heavy-duty, vane-type motor. Tail stock, guide rail and cutting chain are the same as those used on Disston gasoline powered saw. Requires little maintenance for it is built for long, economical service.

3½ and 5 h.p. motors in 24" and 36" sizes. The 3½ h.p. motor requires 90 cu. ft. of air per minute, at 90 lbs. pressure per sq. in.; the 5 h.p., 150 cu. ft. of air per minute at 90 lbs. pressure per sq. in.

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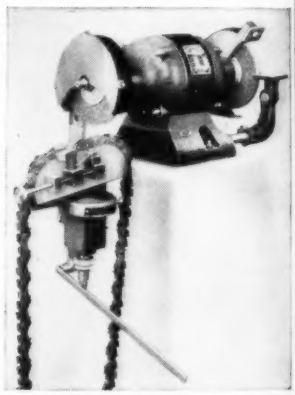
Write for further particulars, or see your Disston Distributor, who carries complete stocks of parts and is prepared to render prompt and expert service.



DISSTON ELECTRIC CHAIN SAW SHARPENER

enables you to do your own sharpening . . . quickly, accurately. Saves time. Keeps chains in first class condition.

HENRY DISSTON & SONS, INC., 865 Tacony, Philadelphia 35, Pa., U.S.A.

of slipping back into a period of tax default and tax deferment by local taxpayers, and to the need to guard against too optimistic forecasts of local growth.

Regional Planning

In the planning session of the Conference, the fundamental nature of planning was brought out and the urgent needs for housing, transportation, sanitation, and industrial progress were pointed up as the backbone of town planning, if properly coordinated.

This was noted in the address of Jacques H. Greber, Inspector General of City Planning, read by Edouard Fiset of the National Capital Planning Service, Department of Public Works for Canada. The regional plan as the preliminary stage of local planning was emphasized. Mr. Greber's message to the Conference included this paragraph:

It is essential to state that a regional, or at least, the comprehensive plan of a group of municipalities, more or less aggregated in a large urban unit, brings an equal and perfectly equitable protection of both their common interests and their municipal independence. It emphasizes their particular characters and desirable tendencies; it defines the limits of their physical development; it prepares the easy movements for their mutual exchanges and contacts; it avoids the duplication of public services which may easily be provided for, in view of a common enjoyment, and it permits realization of community planning at the human scale. A monster city, absorbing its neighbors and destroying local life, is a social disease. It is precisely the result of lack of foresight and of the lazy acceptance of disorder; and, as finally disorder must be fought, a much larger bill has to be paid, for a late and insufficient remedy. Public finances, local governments, and the whole population of the agglomeration are then unjustly penalized for the lack of a timely chart of future and foreseeable development.

Incorporation of public relations as an official municipal activity was recommended to the mayors as a means of strengthening democratic procedure. Henry Davis Nadig, Public Relations Director of the New York Regional Plan Association and editor of THE AMERICAN CITY's monthly department, "The City Tells Its Story," also stressed the importance of public relations as the means of obtaining public understanding of municipal affairs. He urged that the public be thoroughly informed and made to play a real part in planning and municipal progress. Mayor R. H. Saunders, Toronto, explained how he takes city business to the people in his regular Sunday radio program. Mayor A. J. Mason, Springhill, N. S., recommended that labor, management, and civic authorities adopt the basic principles of the Toledo Municipal Labor-Management Plan.

Water and Sewage Works Men Conclude National Meeting

(*Continued from Page* 17)

well, chief State Water Survey, University of Illinois.

Highlighting the meeting at the end of the session was a discussion by Dr. Abel Wolman, on the subject of mass medication through the use of water supplies, with attention specifically directed at fluorine as a method of preventing dental caries in children. Dr. Wolman urged that this be not adopted until:

1. Periods of controlled experimentation have fully elapsed and effects authoritatively reviewed.
2. Alternate means of treating diseases have been fully evaluated. In general, he felt that such alternates are to be preferred.
3. Substantial medical and public health agencies agree on the efficiency of treatment.
4. Public health department and water department officials concur on its use.

At present, Dr. Wolman pointed out, 20 cities have been studied, and several cities are artificially fluorinating their supplies as a mass experiment on its dental effect. Authorities agree, he pointed out that water naturally containing a small amount of fluorine, has a beneficial effect on the teeth, but the information is limited relative to artificial fluorination either as to the effect on the teeth or on the rest of the body. Too much fluorine is known to mottle the teeth of young children.

Officers and Awards

The meetings were climaxed by the installation of new officers and presentation of awards. At the AWWA banquet Wendell R. LaDue turned over the presidential gavel to N. T. Veatch; and at the Federation of Sewage Works Associations George S. Russell, consulting engineer, Russell and Axon, University City, Mo., succeeded Francis S. Friel, consulting engineer, Albright and Friel, Philadelphia, Pa. AWWA named to honorary membership Malcolm Pirnie, consulting engineer, New York City, and John Henry Cook, governor, Society for Establishing Useful Manufactures, Patterson, N. J. The John M. Diven Medal, for outstanding service to the Association, was awarded to Ellsworth Lincoln Filby, of Black and Veatch. The John M. Goodell prize "to the member who has made the most notable contribution to science or practice of water works development as recorded in the form of a paper in the Association's Journal" was awarded to Louis Richard Howson, consulting engineer, Alvord, Burdick and Howson, Chicago.

The Federation of Sewage Works Associations awarded the Harrison Prescott Eddy award to Richard Pomeroy, consulting engineer, Montgomery and Pomeroy, and Fred D. Bowlus, Los Angeles Sanitation District. The award is made for outstanding contribution in research.

The Federation awarded the George Bradley Gascoigne award to Leon S. Kraus, chemist, Greater Peoria Sanitary District, for his paper on the use of digested sludge as an aid to the activated sludge process. Clangdon Pearse, of the Chicago Sanitary District, received the Charles Alvin Emerson award made for meritorious service to the Federation.

Our Sewage Reclamation Responsibility

THE story on the use of sewage sludge for fertilizer and how to increase its values (see page 87) is offered primarily for its challenge. Many sanitary engineers and municipal officials will not like its suggestions and will hope that such ideas do not spread too far and, further complicate their lives.

However, its chief importance is that it seeks to add another basic responsibility to sewage treatment and garbage disposal work. Today, we treat sewage and destroy garbage to eliminate a public health hazard and to eliminate a nuisance. If they perform those two duties, the municipal official and public health officer are satisfied.

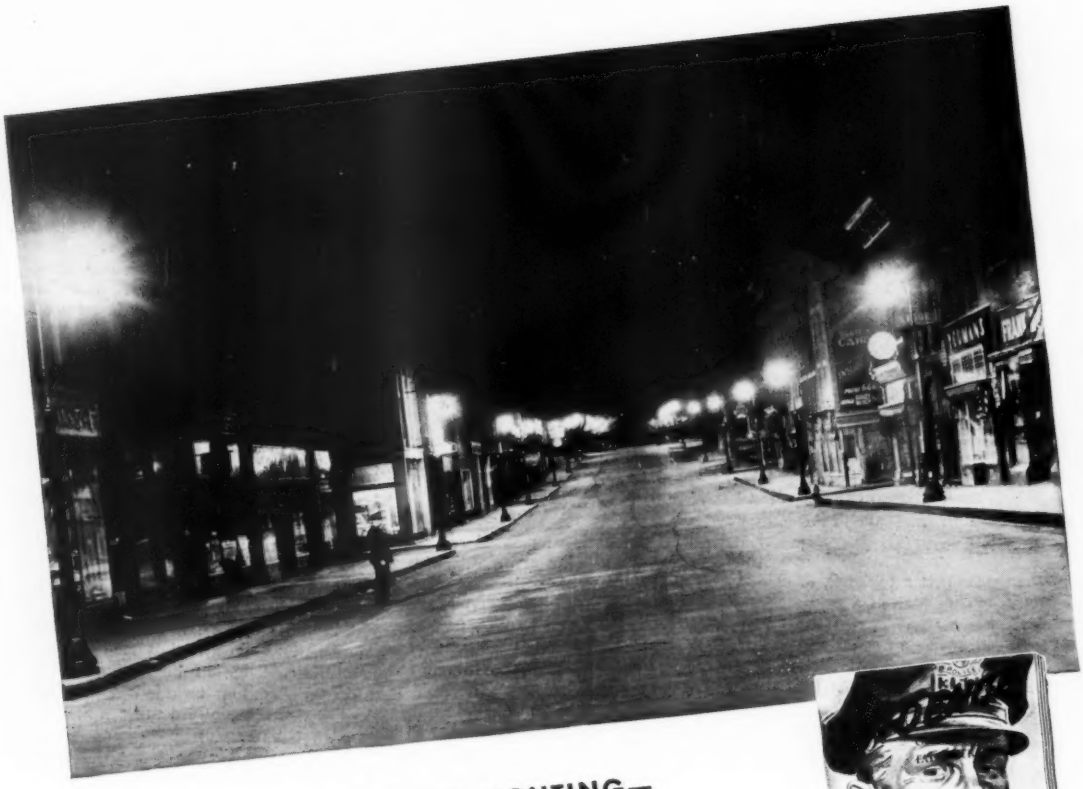
Many plants do offer the sludge for sale or give it away, but they do this only as a sideline operation that must never interfere in any way with the basic duties of the plant as outlined above.

But Mr. Taylor contends that still another fundamental duty exists. He calls for treatment that will return the soil-building portions of the sewage and garbage to the land from which they were removed in the form of food. He argues, and supports his arguments with some imposing references, that if this is not done the system of soil fertility will break down. He questions using the chemical characteristics of sludge as a yardstick to measure soil-building qualities.

Mr. Taylor has had a lifetime career in research engineering—not, however, in the santiary engineering field. His thoughts, therefore, reflect those of the engineer and the investigator taking an unconventional stand. He also is the owner of farm property and has an intimate knowledge about his subject when he talks of soil fertility.

We know, axiomatically, that the public gets in municipal service what the public demands. There is no question that the sludge and garbage solids in most plants can be reclaimed for useful purposes. However, the cost involved will not make the enterprise very profitable, at least on present standards.

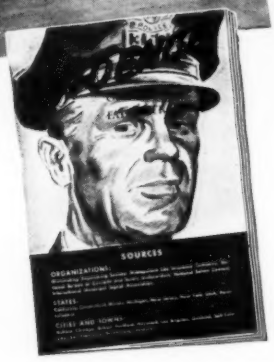
If the public insists on this being done and is willing to pay this cost, then it will be done, just as treatment itself, an operation that is not cheap, is performed.



GOOD STREET LIGHTING—

A civic benefit you can measure

. . . in added, low-cost protection



You can get helpful information and ideas on how to promote traffic safety in your community by contacting your local electric utility—and from the new, useful case history booklet "Evidence", published by The Street & Traffic Safety Lighting Bureau, 155 E. 44th Street, New York City.

A STREET LIGHT is like an extra cop on the beat—many street lights, like a whole new *additional* police force.

In all weather, in all seasons . . . dusk to dawn . . . good street lighting discourages crime, reduces traffic accidents, guides people safely home.

What does this mean to your community in dollars and cents? Simply this—adequate modern street lighting provides the protection your citizens have a right to expect, at a price they can afford to pay.

Measure the cost—in police salaries saved; measure the benefits—in added security, in increased civic pride, in greater real estate values. There's only one answer—no community, large or small, can afford to be without good street lighting.

GOOD STREET LIGHTING
THE SIGN OF A GOOD PLACE TO LIVE

Traffic Control and Facilitation

Everybody Is Solving It

Four Hundred More Traffic Officers in Los Angeles

LOS ANGELES' annual loss from motor-vehicle traffic accidents is staggering. Last year 481 persons were killed and 19,145 injured. The economic loss was estimated at $21,000,000. As part of a plan to remedy this situation, a traffic survey was conducted last spring by the Traffic Division of the International Association of Chiefs of Police. A direct result of this survey is the addition in the near future of 400 policemen to the Traffic Bureau of the Police Department, enlarging the personnel of that bureau from 563 members to 963. This expansion will be accompanied by additional motorized equipment and an intensified training program.

In our 1947-48 budget, effective July 1, 1,170 new police positions were added to the force, more than one-third of which (the 400) will be allocated to the traffic bureau. The motor-cycle division will receive 177 of these men, making a total of 340 riding positions. Each month one hundred recruits will be placed in training at the Police Academy, until all the positions are filled.

Causes of Problem Are Three-Fold

Los Angeles' traffic problem has arisen mainly because of rapid and continuous growth in population—20% in six years. At this rate, by 1957 Los Angeles will have almost doubled its present population of 1,805,000.

Another determining factor in our ever-present traffic problem is that Los Angeles, in terms of street mileage and area, is the largest city in the United States. It encompasses an area of 451 square miles, 60% more than New York City, and more than twice that of Chicago. The total mileage of streets is 5,000, 50% more than Chicago and more than twice that of Detroit or Philadelphia. Because of this large area, the vast distances separating the various industrial, business, harbor, and residential sections in Los Angeles make the population almost wholly dependent upon motor-vehicle transportation. Public carriers can serve only a small part of the load, and, hence, the majority of commuters travel by car. The complexity of the city's traffic problem is indicated by vehicle registration figures, which show that Los Angeles has one vehicle for each 2.8 persons. Interesting comparisons are that Detroit has one vehicle for each 3.4 persons; Chicago one for each 3.4 persons; New York one for each 8.1 persons. In January 1947, the city registered 705,000 vehicles, as compared with 587,000 in April 1940.

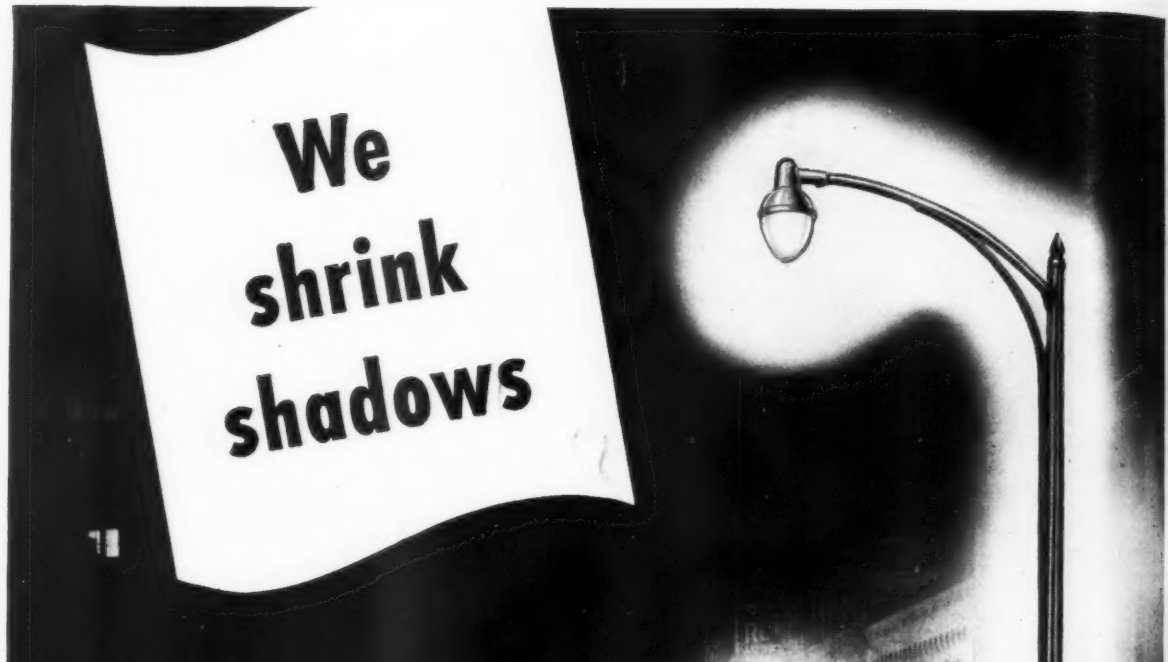
These factors make for congestion, and the job of the additional traffic officers and the traffic bureau will be to show an improved record for 1947-48.

C. B. HORRALL, *Chief*
Department of Police
Los Angeles, Calif.

Dayton, Ohio, to Relieve Traffic Congestion

Like many other cities, Dayton's system of streets was not planned for present-day traffic. The three rivers skirting the downtown business section and the lack of bridges across these rivers add to the problem. Only two streets extend from one corporation limit across the city to the corporation limit on the opposite side. All others are dead-end streets. The rivers form a semi-circle around the downtown business section, resulting in four of the five north-south streets dead-ending on the north. This causes bottlenecks on those few streets

XUM



HELPING dispel gloom, turning danger streets into safety streets, is a job we've been working at for over 40 years . . . ever since the beginning of modern street lighting in this country.

During that time we've designed and engineered many improvements in the *steel* standards that support street lights. We've constantly sought *and found* ways to make these standards more serviceable, more durable, more attractive. Union Metal steel lighting standards are faithful assistants to the law in protecting lives and property—in helping traffic move with greater security—in towns and cities across the nation.

Right now is a good time to plan improvements in your community's street lighting—and to include Union Metal steel lighting standards in your plans. The entire community will benefit in many ways. *Money spent for street lighting improvements is a wise and economical investment.* The Union Metal Manufacturing Company, Canton 5, Ohio.

We regret the present extended deliveries due to the steel shortage, but the delivery situation is improving and you will find Union Metal lighting standards well worth waiting for.

UNION METAL

Largest Producers of Street Lighting Standards

bridges. Because of the rivers, a percentage of traffic driving from side of the city to the other must through the downtown business ion, adding to the congestion.

nother problem becoming acute is estion in the residential business . These outlying business districts always on a main thoroughfare, and ently center around an intersec- of two such thoroughfares. Here is always a demand for more ing spaces than are available. Fre- tly such areas develop greater con- ion than in the downtown business ion. One quick relief is the elimina- of parking on these streets during traffic periods.

ite a portion of these problems be solved in the near future as the ten-year capital improvement program progresses. This program has made available $1,700,000 for two new bridges; $3,750,000 has been appropriated for thoroughfare openings and widenings. The latter amount will include a circumferential street plan around the downtown business esction. Another $3,700,000 will be used for repaving and resurfacing.

Until bridge and street constructions are completed the immediate problem is what to do with tomorrow's traffic today. One of the solutions seems to be off-street parking, so that the streets may be used for moving traffic and not for storage.

CAPTAIN P. J. PRICE
Police Department
Dayton, Ohio

Boston Sees Transit As Answer

the Boston Metropolitan area, over million persons must be furnished transportation daily. The present on Elevated System carries over million passengers each day. The ulty is that the lines of that system t extend out to the suburban areas, the result that too many of the banites must resort to using their cars. This causes the choking of already inadequate streets in the r of Boston, because of too few ing facilities. By the greater use of c transportation vehicles, it is pos- to reduce the problem of traffic estion in metropolitan Boston.

any other measures have been tried as traffic lights, one-way streets, ed or restricted parking, and regu- ns for time of delivery of goods. ur of downtown Boston will demon- e that those expedients have not d the congestion. A fundamental has been made in trying to solve problem by providing the means for mass of citizens to commute by pri- auto. The automobile uses 46 re feet of street space per passen- ger compared with 4 square feet per passenger in a subway. A long-range program for new thoroughfares and express highways is no doubt necessary in order to cover completely the transportation needs of the metropolitan area. However, no system of highways can replace a coordinated rapid-transit system for mass transportation.

The program of rapid transit, recommended by the Metropolitan Rapid Transit Commission to provide first-class transportation for Boston, contemplates changes in the present subway system and the construction of some new subways and various rapid-transit extensions within a radius of approximately ten miles. The car rider will pay for the costs of these subways and extensions. The ultimate objective should be the abolition of parking on all streets needed for traffic movement.

The added revenue from an increased passenger traffic will tend to make the system self-supporting. It will permit people to move through the subway system to suburban areas on opposite sides of the city. It offers transfer service within the city, clears the streets of automobiles by offering people faster, more frequent, and more economical transportation. Motor vehicles cannot compete in the metropolitan area with a modern, electrified system of rapid transit.

CLIFFORD N. CANN
Consulting Engineer
Metropolitan Rapid Transit Commission
Boston, Mass.

Wider Streets Through Arcading

Because the early streets in Miami, Fla., were laid out without any comprehensive street plan, action had to be taken for both present and future street needs. Provisions were made for the widening of thoroughfares by establishing uniform street and building lines at stated parallel distances from street centers. More than one hundred of Miami's existing streets, with widths of less than 50 feet, are zoned with building lines to provide for widening to at least 50 feet. Minimum widths for present and future thoroughfares have been planned and zoned for widths of 90 and 100 feet.

In the central business district where blocks have been solidly built up with large substantial structures, increased roadway widths have been achieved by arcading under the second-story street fronts of buildings. With this method, some of Miami's sidewalks have been widened to at least 12 feet. This device has not only extended the width of the streets; in this semi-tropical climate sidewalks covered by arcading or continuous marquees are attractive to pedestrians, keeping them sheltered from rain and the direct rays of the sun.

FRANK R. STEARNS
Executive Secretary
City Planning Board
Miami, Fla.

Arcading not only increases the width of this sidewalk to 12 feet, but it also shelters pedestrians from Miami sun and rain.

When Fire Engines Can't Get Through...

the cost of traffic congestion is becoming too high

In one eastern city, motorized fire equipment can't get to fires as fast as horsedrawn units did fifty years ago. Imagine what this slowdown costs in time, money, and lives!

In every city, traffic jams are choking and squeezing the vital movement of people and goods to a stop. And if you think conditions are bad now, wait until automobile production really hits full stride!

Since automobiles carry an average of only 1.75 persons per vehicle, each passenger uses 500 square feet of street space and 140 square feet of parking space. Compared with the 70 square feet of street space required by a transit rider, public transit vehicles use streets seven times as efficiently. They carry as many people as 25 automobiles—and use not an inch of parking space.

That's why you should join forces with your public transit company to persuade more people to ride by transit and leave their automobiles at home. And one vehicle you'll want to help you do it is the electric trolley coach.

Swift, smooth-riding, maneuverable trolley coaches have all the riding features that people prefer—ask the people who ride them. And ask the transit men who operate them. They'll tell you about the super earning power of trolley coaches that's enabling them to improve service and modernize facilities.

If your city is not yet served by fast, quiet trolley coaches, find out from your G-E representative on which lines these electrics would be economically best suited. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

Have you seen *Lifestream of the City*, the movie that shows how to reduce traffic congestion? Ask your G-E representative to arrange for a showing.

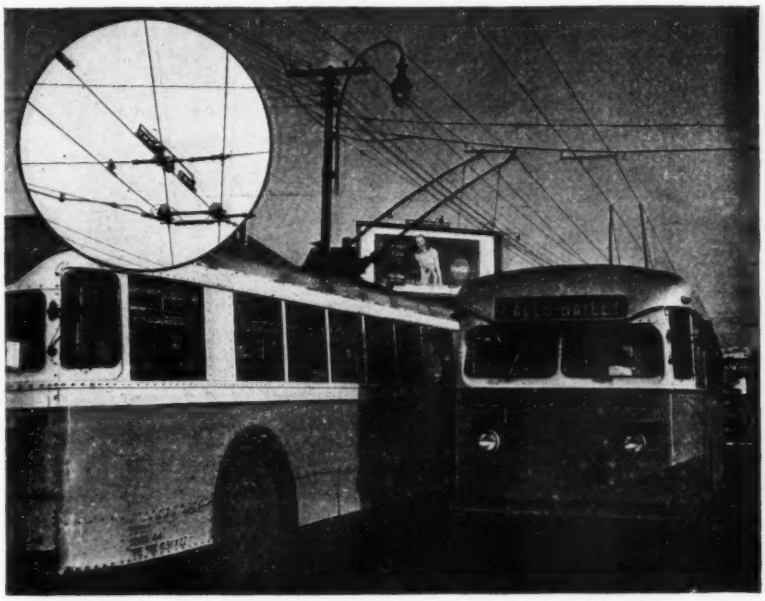
GENERAL ELECTRIC

197-198

Express Trolley Coach Service in Akron

AKRON, Ohio, recently put into operation an express trolley-coach service, in which one trackless trolley can overtake and pass another. Although the express coaches use the same overhead as the locals, the operations are scheduled and operated as two separate lines. This is made possible by placing some by-passes at strategic points.

An extra set of wires has been installed at each point where the express coach passes the local. The passing area extends for a distance of 250 feet. As the express approaches the by-pass, it sets a light, located 1,000 feet ahead of the passing area. The local operator waits in the by-pass until the express passes. These by-passes are located at regular stops for the local coach, enabling the local to use the by-pass wires next to the curb while the express continues on through, using the main-line wires. Akron is the second city in the United States to have this express trolley-coach service, Atlanta being the first.



In the inset is the wiring arrangement of a by-pass which makes it possible for this express trolley coach to pass a local on the same line.

President's Highway Safety Conference

LAST year, 33,500 persons died as a result of highway accidents, and well over a million were injured. That is a tribute to inefficiency that this nation cannot afford to pay," President Truman told the 1947 President's Conference on Highway Safety, held in Washington recently. He added, "We are dealing with what amounts to a national disaster." One of the menaces, he told the thousand delegates, is the lack of uniformity in laws covering traffic requirements, and he asked that all states raise their motor-vehicle standards. At the closing session Mr. Truman emphasized that thousands of towns and cities had failed to push protective programs, and that deaths and injuries had increased in some of these communities.

Otto F. Messner, Chairman of the State Official's National Highway Safety Conference, in analyzing accident causes, said that 71% of the fatal accidents and 54% of personal injuries on the road were attributable to violations of speed limits.

However, Mr. Truman pointed out that a major victory has been won in the campaign against carelessness when compared with pre-war years. "In 1941, accidents on streets and highways cost 40,000 lives. In 1946, with travel 4% higher, the highway fatality rate showed a sharp and gratifying decline. Last year the rate was 9.8 deaths per 100,000,000 vehicle miles, compared with 12 in 1941." The accident reduction record, according to the President, was a promise of what could be acomplished through concerted effort of motorists and pedestrians under the leadership of government agencies, and with the support of organized groups of citizens.

The conference was presided over by Major General Philip B. Fleming, who, in a recent traffic safety report, gave credit to municipal officials throughout the United States for their active cooperation in the safety cause. He pointed out that without their help there would not have been the 17% decrease in the number of traffic deaths in January and February 1947, as compared with those deaths during January and February of 1946.

Fort Wayne Aids Blind Pedestrians

THANKS to John G. Long and the Indiana Service Corporation, blind people of Fort Wayne, Ind., have finally solved the problem of how to signal public-transit vehicles. Mr. Long's blindness prevented his knowing when a motor coach was approaching and what route number it bore. He said he didn't mind missing a bus in the summer, but in the winter it was unpleasant to stand on a street corner while bus after bus went by.

And so, he came forth with a plan. His suggestion was a small but conspicuous book of eight pages, one for each transit route-number and one for a weekly pass. Each page is perforated with the same number of holes as the route-number. The blind rider counts the number of holes, opens the book to the desired route, and holds it up for the driver to see.

When Mr. Long's idea was put into effect by Indiana Service, it worked to perfection. The coach operator easily saw the number and stopped to pick him up. Now the books have been distributed to all blind persons in Fort Wayne, so they no longer will have to wait on a windy street corner while bus after bus passes them by.

Train Them Young

HIGH school students of High Point, N. C., are being instructed by the Police Department in the proper operation of motor vehicles. Regular classroom instruction is given by one of the police officers, who gives examples of the disastrous results which follow careless driving. The students are taken out in a car equipped with dual controls, donated by the Rotary Club, and are taught how to handle motor vehicles. Several hours' time is required in both classroom and field work.

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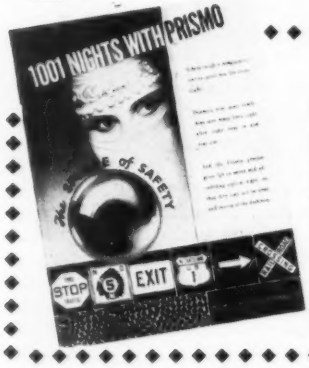

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Here is the complete sign completely *reflectorized.* 24 hour a day visibility for *years* — has been achieved in a few *minutes.*

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Any way you look at it, Prismo is best. Sign is now continuously visible—day and night—from *any* angle.

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Brilliant Lighting for Manitoba's Capital

Evolution of Winnipeg's Street Lighting System

1906—220 9.6-ampere D.-C. open-arc series lamps.
1906—7.5-ampere A.-C. enclosed-arc series lamps (produced 700 candlepower).
1909—First magnetite arc lamp installed, operating from a mercury arc rectifier (produced 1,630 candlepower).
1915—First 10,000-lumen (about 1,000 candlepower) 20-ampere series incandescent lamps.
1936—All converted to A.-C. filament lamps.
1947—Change initiated from series system to a multiple system.

By C. A. MIDWINTER
Street Lighting Superintendent
City of Winnipeg, Canada

DURING recent years, improvements and additions to the street lighting system of the City of Winnipeg, Manitoba, Canada, have been made on an individual or "as required" basis. These improvements and additions were either the result of recommendations on behalf of the Street Lighting Division by reasons of its own investigations, or they arose from the flow of requests or complaints made by various city committees or citizens. Restrictions and shortages have made this method inadequate. To catch up and modernize, a sixty-eight-page *Report and Recommendations* was submitted to the Winnipeg City Council this year by J. W. Sanger, General Manager, Hydro Electric System and Street Lighting Division. The extensive five-year program will bring the level of street illumination to that recommended by the I. E. S. Committee on Street and Highway Lighting, 1945.

Present Deficiencies and Cures

On many streets excessive spacing of lamps produces irregular street lighting. These light and dark spots affect vision, and to eliminate them additional lamps will be installed. Old, upright, ornamental luminaires waste light and throw a bright spot on the pavement below the lamp. These will be replaced by modern pendant directional luminaires that distribute the light downward and evenly along the pavement. More residential lighting is needed and will be installed. Additional lamps and equalized spacings will be provided in local business areas and on traffic arteries.

Good street lighting and a street whose closely spaced trees are more than twenty-five years old are a difficult or expensive combination with which to deal. The beauty and utility of most of Winnipeg's trees in the residential district is indisputable. But adequate street lighting is an important feature of city life, and although modern street lighting design can be accommodated to existing trees, it will be ineffective unless continual attention is paid to tree trimming. To overcome these con-

Before and after photographs show the elimination of light spots and dark shadows with installation of additional lamps and modern pendant luminaires suspended from mast arms.

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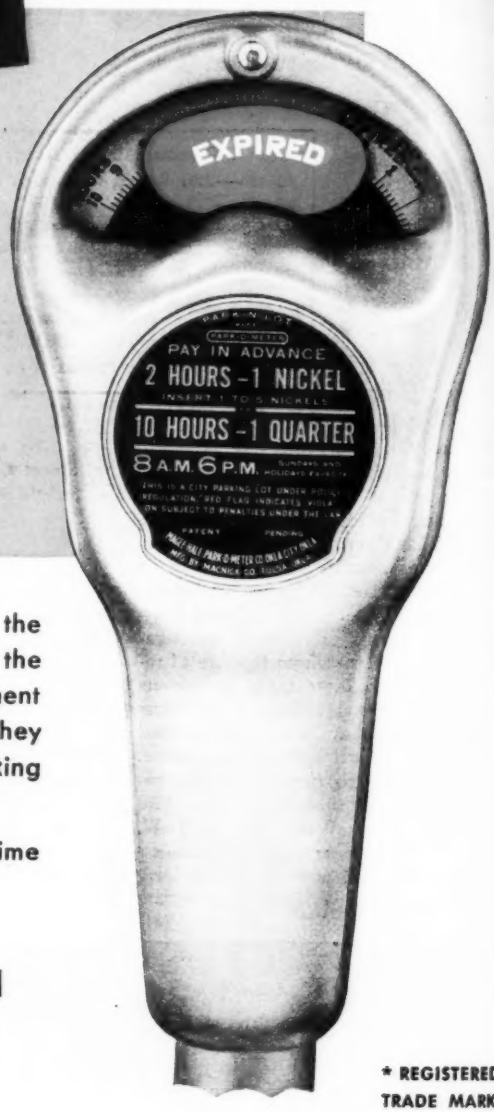

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2 hours, 1 nickel	1 hour, 1 nickel
4 hours, 2 nickels	2 hours, 2 nickels
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8 hours, 4 nickels	So on through 10 hours
10 hours, 5 nickels	5 hours, 1 quarter
10 hours, 1 quarter	10 hours, 2 quarters

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ditions it has been suggested that street-lighting poles on forested streets be located as close to the curb as local conditions will permit and that these luminaires be suspended over the pavement from mast arms of appropriate length; that a program for necessary tree trimming be inaugurated from the Street Lighting Division to the Public Parks Board; that judicious trimming of trees be undertaken to minimize the screening effect of limbs, branches, and leaves in the cone of light spreading downwards from each luminaire; that trees in the older neighborhoods be thinned out by removal of every other tree; that all existing trees be removed from important thoroughfare streets occupied by business establishments. This last suggestion will not only improve the lighting for traffic purposes but will provide a wider-looking thoroughfare.

Ornamental Street Lighting

In the case of the ordinary street lighting, the cost of installing the lamps, the supply circuits, and the expense of operation and maintenance are charged to appropriate capital or operating accounts. The invested capital is written off over a period of years. Ornamental lighting, on the other hand, with its all-metal standards and underground cable connections, is comparatively costly to install. However, it is a distinct acquisition to a street or district not otherwise studded with wooden poles. To justify ornamental lighting there should be pavements and boulevards, a general excellence in the appearance of the street and the residences on it, and there must be a number of specific requests for ornamental lighting.

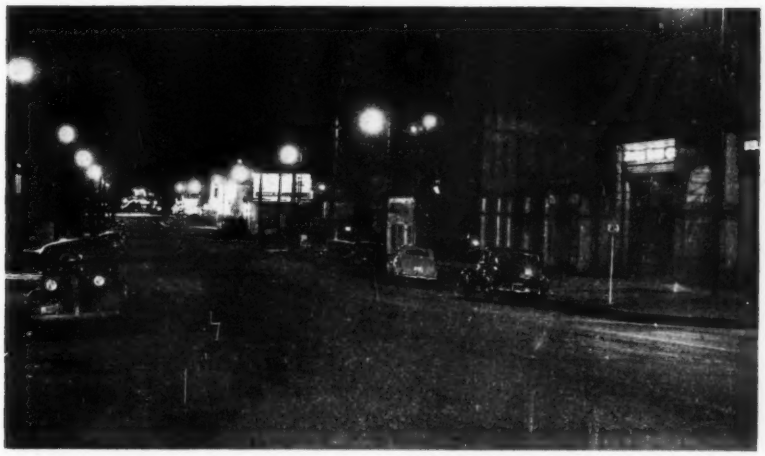
At the end of 1946, the total number of large-size (over 10,000 lumen) street lamps in service in Winnipeg was 5,033. The recommendation calls for 869 additional ordinary lamps and 519 ornamental lamps, the latter replacing 205 existing ordinary lamps.

Per Capita Costs

Without finance charges the budget estimate for 1947 operation and maintenance of the Street Lighting Division is $183,200 or 79 cents per capita. The increased expenses from the new lighting would raise the annual cost by 14 cents per capita. A factor in this low cost is that city energy for lighting costs only 0.432 cents per kwh. The total capital cost is estimated to be $346,740.00, of which $160,540.00 would be paid by the city-at-large, and $186,200.00 charged the property owners as a local improvement.

In comparing street lighting data of Winnipeg with those of Chicago and Detroit, we arrive at some interesting figures. The total miles of streets of Winnipeg is 441 miles in comparison to the 3,625 miles of Chicago and the 2,600 miles of Detroit; the average lamps per mile, 11.6 compared to the 27.6 lamps of Chicago and the 15.8 lamps of Detroit; the 117,000 lumens generated per mile in Winnipeg against the 110,160 lumens generated in Chicago, and the 112,300 lumens generated in Detroit, and the annual cost per mile in Winnipeg is $408, while that of Chicago is $847 and that of Detroit (who generates its own energy) $634.

Denver's Mercury Vapor Lamps



West Colfax Avenue is relighted with 16,000-lumen mercury vapor lamps.

By GEORGE E. CRANMER
Manager
Improvements and Parks
Denver, Colo.

THE mercury vapor street-lighting program of Denver, Colo., as outlined and described two years ago in the January and April 1945 issues of THE AMERICAN CITY, is now going into effect. Mercury vapor lamps were selected in order to obtain maximum visibility at a substantial savings to the taxpayer. The pendant type of luminaire places far more light on the street, while a 30-foot mounting height brings uniformity without glare. The higher intensity of the lamp made possible having fewer luminaires in the block.

For these reasons, Denver had six blocks on Glenarm Place relighted, using twenty-five 16,000-lumen mercury vapor luminaires mounted at 30 feet, to replace fifty 4,000-lumen incandescent upright luminaires mounted at 17 feet. The resulting increase in light output was 200,000 lumens, and the annual cost to the city was cut $357. Eight blocks on Arapahoe Street were treated similarly, with fifty-nine 4,000-lumen units being replaced by thirty-two 16,000-lumen lamps: an increase of 276,000 lumens at a saving of $318 per year. Four more blocks were relighted with nineteen 16,000-lumen mercury vapor luminaires which resulted in an increase in the light output by 160,000 lumens and also resulted in a sav-

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FROM the Gulf of Mexico up into Canada, Duals are delivering top-notch performance in helping control parking. They perform so dependably because Dual engineers never compromise with *Quality* in building them.

They are weather-proof and the cast aluminum housing is "air-conditioned" to prevent moisture condensation. The mechanism is a completely packaged unit, engineered to operate practically maintenance-free. The automatic meter setting works without levers that cause servicing problems. The specially designed coin compartment is tamper-proof. *And the meter movement—the most vital part of any meter—is manufactured by the makers of the famous Seth Thomas clocks.*

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Shoppers Like Trolley Coaches becaus

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Large, bulky packages aren't so troublesome when shoppers ha deep, comfortable seats with plenty of leg room, wide aisles a ample head space.

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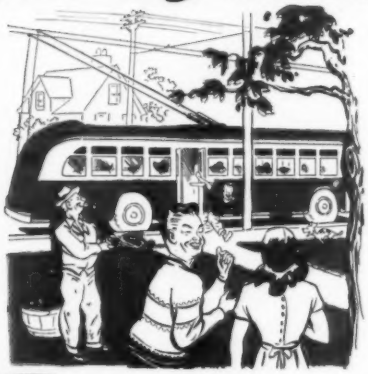

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ing of approximately $206 per year.

In a few instances, it was not possible to save the city money with the modernization of street lighting, but the cost was negligible in comparison with the lighting output. For example, the relighting of twenty-four blocks increased the lighting visibility by 2,068,000 lumen, the total annual expenditure being increased $5,717.

Many tests have been made by the city and the Public Service Company, using the mercury vapor-type lamp as a light source in many types of luminaires and under varying conditions of spacing, height, intensity, and lamp position. It was found that the light distribution pattern improves with height up to 30 feet, after which the intensity drops, and it becomes difficult to control the light and keep the spill light off the building fronts. Tests showed also that a mounting height up to 40 feet is satisfactory in parks or playgrounds, where little control of light is needed, and where a "moonlight" effect is desirable. Existing luminaires, designed for use with the incandescent lamp, will not give satisfactory control of the long cylindrical mercury vapor light source.

A sample oval-shaped luminaire, designed to utilize a 20,000-lumen mercury vapor lamp and placed in a horizontal position within the luminaire, gave excellent results in providing uniform distribution of light along the street, accurate cut-off of lights at the side of the street, accurate cut-off of light in the vertical plane with a minimum of glare, and high light intensity for the full width of the street. Denver has ordered seventeen of these oval-shaped luminaires, together with ballasts and lamps, for an experimental installation.

Sodium vapor lighting was tried in Denver, to the extent of approximately seventy-five units. However, they have not been very popular. All railroad underpasses, as well as several viaducts and numerous dangerous intersections, were thus lighted. The characteristic yellow has a psychological value as a "caution" color, but it has been found that when the lighting level is raised by an adequate number of mercury vapor luminaires, the same degree of safety can be attained, with a more favorable color reaction. Therefore, plans for modernizing Denver's viaducts and underpasses call for the use of mercury vapor rather than sodium vapor lighting.

Future Plans

The general program will include the installation of 4,500 of the 16,000-lumen mercury vapor-type luminaires on Denver's streets as soon as equipment deliveries can be made. The principal installation expense of these projects will be borne by the Public Service Company of Colorado, to an expenditure of $1,000,000. Under this program the annual cost to the city will be increased approximately $175,000 over the present bill of $275,000, or about 63%. The light output will be increased from 40,000,000 lumens, to 100,000,000 lumens, which will be at least two and one-half times as much light on Denver's streets.

Big Celebration for Newton's New White Way

NEWTON, Kans., is among the first cities in the south-central section of the state to install a modern street lighting system. Recognizing the value of the new lights in providing greater driver and pedestrian safety, in reducing crime, and in increasing business, nearly the entire Newton population (11,000 people) turned out for a celebration sponsored by the Kansas Gas & Electric Company. The ceremonies coincided with the first night operation of the lighting system.

Festivities were inaugurated by a torchlight parade headed by the high school band and troops of Boy Scouts, followed by cars carrying principals in the program, city officials of Newton and neighboring towns, newspaper men, utility officials, and officers of the Chamber of Commerce. Entertainment was furnished by the Ark Valley Boys, popular Station KHF (Wichita) cowboy singers. Crowds jamming more than four blocks remained throughout the two-hour program.

Following the parade, the official program was broadcast. J. L. Napier, editor of the *Kansan Republican*, outlined the evolution of Newton street lighting. Next E. B. Edwards, manager of the Newton Office of the Kansas Gas & Electric Company, spoke briefly about the agreement between the municipality and the utility concerning the new system. The culmination of the program was reached when the Mayor, Mrs. Daisy Spencer, pulled the lever turning on the eight-three luminaires, each of which provides 1.45 foot candles of light on Newton's broad main thoroughfare. This is above the I.E.S. Code Recommendations for heavy pedestrian and vehicular traffic streets. Forty-one of the new luminaires are equipped with a 10,000-lumen incandescent lamp, the remainder with a 6,000-lumen lamp.

The installation of the new "White Way" lighting in Newton is the beginning of complete modernization. At present, a secondary system consisting of 202 luminaires is being installed. All of the residential fixtures are being changed from 100 to 250 candlepower.

By ELDER GUNTER
City Manager
Newton, Kans.

What Rochester's Street Lighting Costs

STREET lighting rates of the Rochester Gas and Electric Corporation are established by three annual charges. They include the facility charge per linear foot of street lighted, the fixture charge, and the lamp unit charges. Respectively, these three charges amount to 36%, 23% and 40% of the annual bill of approximately $765,000. The total annual cost per linear foot of street lighted averages about 29 cents.

The rates are based first on an annual facility charge per foot of street lighted. For underground wiring, this varies from 12.5 cents per foot, where cables and lamps are along one side only; 15.5 cents for staggered lamp arrangement; 21 cents where lamps are opposite and fed by a cross-over; to 25 cents where cable is along both sides of the street.

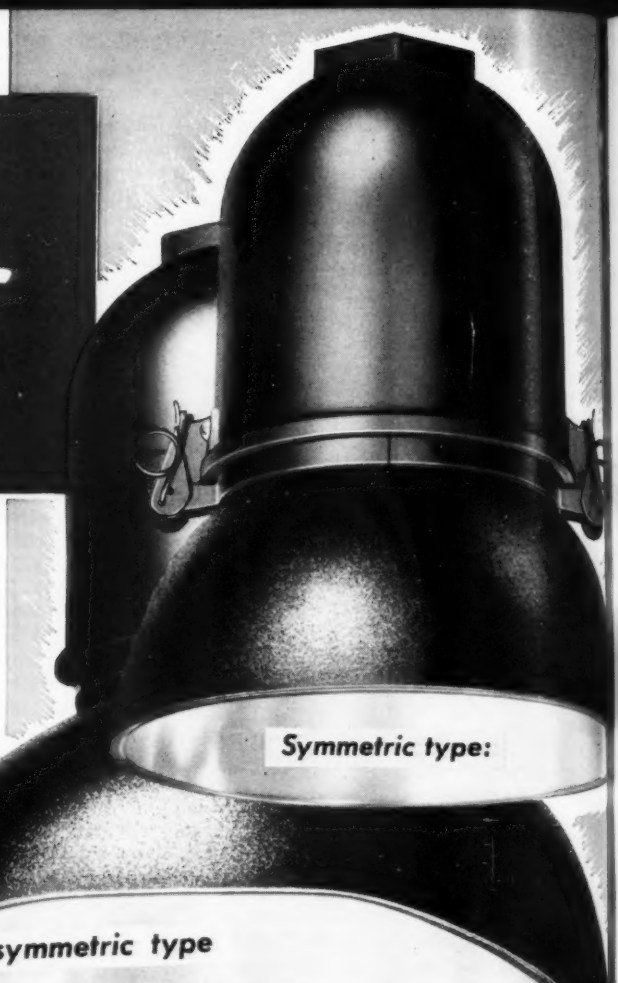
The fixture unit charge per year varies from $3.75 for the mast-arm and pendant-type unit on a wood pole, of which in round numbers there are 4,000, to $46.50 for the 18-foot metal standard with twin-pole top globe fixtures, of which there are approximately 375. For the ten thousand 10-foot or 12½-foot concrete poles with harp fixtures, the charge is $8.75.

For special service lighting, such as in underpasses, the charges are $8.70 for 1,000-lumen units, $14.20 for forty 1,500-lumen units, $20.55 for forty-four 2,500-lumen units, and $27.70 for ninetyy-eight 2,500-lumen units burned twenty-four hours.

Lamp charges range from $7.10 per year for the 2,574 street lamps of 1,000 lumens to $39.05 for the 1,554 lamps of 10,000 lumens. In all, there are 20,092 lamps along the 504 miles of lighted street, 322 miles fed by underground circuits, 182 miles by overhead.

RUDEN W. POST, *Inspector*
Subdivision of Street Lighting
Rochester, N. Y.

New L-M *Directolites* provide scientific light distribution at low cost



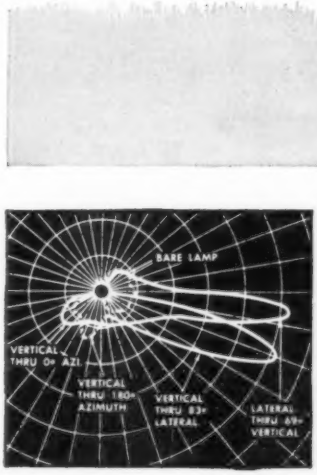
These new L-M *Directolites* put the efficiency of modern scientifically controlled street lighting within the reach of smaller communities and outlying areas where highest intensity is not required or where economy is a major factor. *Directolites* are highly efficient, practical to install, and so strong and durable that they seem almost indestructible.

Definite Control of Light Distribution: the design of the *Directolite* and the specular reflecting surface provide a light pattern of high visibility with little glare. L-M *Directolites*, recommended for lamps up to 2500 lumens, provide almost double the useful light of a radial bowl.

High Physical Strength: *Directolite* reflectors are made of tough, quenched glass that has an amazing resistance to impact —even a hammer-blow won't chip or crack it! They do not require an outer protective cover or housing. Aluminum backing and glass are joined at high temperatures and then the outside is covered with a tough weatherproof enamel.

Easily Interchanged with Present Equipment: *Directolite* reflectors are interchangeable with open radial reflectors, making installation very economical. Or they can be used with a variety of L-M metal hoods or porcelain heads for multiple or series systems. When higher intensities are desired, the L-M Spherolite or Controlite can be interchanged. This advantage is important, not only for present economy, but also for simplicity in future installations to keep pace with city development or traffic growth.

Write for detailed information on L-M *Directolites* and other L-M equipment. One of the oldest and largest manufacturers of street lighting equipment, L-M provides complete lighting engineering service and can help you plan for present and future installations. Address: Line Material Co., Milwaukee 1, Wisconsin.



Asymmetric type: light distribution curve. The asymmetric type *Directolite* reflector provides lateral control of the I. E. S. type II classification.

Symmetric type: light distribution curve in vertical plane. This type gives even, horizontal distribution, with sharp cut-off to shield second-story windows.

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L-M DISTRIBUTION EQUIPMENT INCLUDES: Distribution Transformers • Fuse Cutouts and Fuse Links • Lightning Arresters • Oil Switches • Pole Line Hardware • Line Construction Specialties • Underground Equipment • Fiber Conduits • Street and Airport Lighting Equipment • Wired Radio Control Equipment • Guyorites

Anti-Negro Covenants II*

DISTRICT OF COLUMBIA. *Hurd* v. *Hodge*, District of Columbia Court of Appeals, May 26, 1947.

In this case the District of Columbia courts again had to pass on racial covenants in a border-line white-Negro residential area in Washington. On the block in question twenty lots were covered by a covenant providing that "said lot shall never be rented, leased, sold, transferred or conveyed unto any Negro or colored person," while the adjoining eleven lots had long been inhabited by Negroes. Three previous sales of these restricted lots had resulted in extra-legal pressure and abandonment of the property by the Negro purchasers; but after four sales made to Negroes in 1944 and 1945 objecting neighboring white landowners brought the present action for an injunction.

The validity and enforcement of anti-Negro covenants in Washington has been the subject of constant litigation. After *Corrigan* v. *Buckley*, 271 U. S. 323 (1926), in which the Supreme Court dismissed an appeal in such a case and so in effect gave sanction to racial covenants, the covenants have uniformly been enforced. However, criticism of such enforcement has been long and persistent, and in 1945 the three-way split of the three-judge Court of Appeals in *Mays* v. *Burgess*, 147 Federal (2d) 869 (a case arising out of the same area as the present one), gave evidence that the criticism was finally having its effect. Chief Justice Groner, in the official opinion, upheld enforcement of the covenants; Justice Miller was less sure on the substantive question, but thought that as a lower Court they were necessarily bound by the *Corrigan* precedent; and Justice Edgerton in dissent gave the first elaborate judicial criticism of the old legalistic viewpoint. The Supreme Court refused to review this decision, 325 U. S. 868, 325 U. S. 896, with Justices Murphy and Rutledge noting special dissents to that refusal.

In the extensive reconstruction of the personnel of the District of Columbia Court of Appeals since 1945, Justices Justin Miller and Thurman Arnold have resigned and been replaced by three new Justices, none of whom was previously widely known except for ex-Senator Bennett Champ Clark of Missouri. In the present case two of the new judges merely cited a long row of precedents in emphatically upholding enforcement of the racial covenants. The opinion (by Justice Bennett Clark) rested heavily on Justice Groner's *Mays* opinion (with which no one else formerly agreed), but actually went a great deal further. Although the covenant in the *Mays* case was to last for twenty-one years, and the present covenants were perpetual, Justice Clark here held that there was no substantial difference between the two and that neither constituted an illegal restraint on alienation. According to the majority, in the District of Columbia racial covenants are valid *and* enforceable by injunction "whether by deed covenant or agreement between property owners, whether for a designated length of time or perpetual, and whether against alienation, use and occupancy or both."

Justice Edgerton's long and brilliant dissent should become a classic expression of democratic faith on one of the great American problems — and of devastating logic as well. He began his opinion with a good argument that the Supreme Court in the *Corrigan* case did not pass on the main substantive issues as to enforcement of racial covenants—and incidentally admitted that he had missed this point at the time of his dissent in the *Mays* case. According to a traditional legal distinction, the validity of a contract is quite a different question from whether it will be enforced by injunction. (For example, while an injunction may not be granted to enforce an admittedly valid contract, in the present situation alternatively the neighbor might obtain damages, or, alternatively, a Negro purchaser might not be able to get specific performance of his contract of purchase.)

In the *Corrigan* case the only issue raised at the trial was whether such contracts were wholly "void"; and therefore, when on appeal the parties tried also to question the injunction included in the decrees, the Court refused to hear this new argument—and then disapproved it, in six words of pure dictum. Justice Edgerton argued that this distinction between the validity of the contract and granting an injunction was "very great." Before granting an injunction in any type of case, a court is supposed to balance the equities on both sides; and, in the existing housing shortage, the extreme hardship involved in evicting Negroes from a house which they had bought and moved into "greatly outweights any benefits which the appellees [neighbors] may possibly derive."

The Constitutional Problem

Since the guarantee in the 14th Amendment of equal protection of the laws applies only as against the states, the constitutional problem in the District of Columbia is phrased in terms of the limitations of the Federal Government in the due process clause of the 5th Amendment; but no great difference results. As background, racial zoning is of course unconstitutional. *Buchanan* v. *Warley*, 245 U. S. 60 (1917). Moreover, if an ordinance forbids Negroes to buy houses in a white residential area (and, of course, vice versa), except with the approval of a majority of the neighboring white owners, the ordinance and any injunction based upon it are unconstitutional. *Harmon* v. *Tyler*, 273 U. S. 668 (1927). The question on enforcing racial covenants is then quite simple—"whether an injunction which does the same thing without the support of an ordinance is constitutional."

If the use of racial covenants to attain the same goal involves any public action, that is also unconstitutional; but it has always been argued that these are merely private contracts. Justice Edgerton's discussion of this question is so clear and pithy that only direct quotation will do justice to it.

"Restrictive covenants are not self-executing. This case arises because persons whom they purport to bind have violated them. The white appellants have sold restricted property to the colored appellants. The appellees, neighbors not directly involved in the sales, seek to set them aside. For that purpose they necessarily invoke the aid of a court of equity. If all persons whom the covenants purport to bind had refused to sell to Negroes, no government action would be involved but only the action of private individuals, and no question of due process of law would arise. The situation then would be comparable to the refusal of the innkeeper in the Civil Rights Cases to serve Negroes. Even if some landowners had persuaded or hired others not to sell to Negroes, or Negroes not to buy, there would still be only private action, whether legal or illegal, and no due process question. But in this case private means have failed to produce compliance with the covenant and a court has been asked to enforce it. If the colored appellants refuse to vacate the premises in obedience to the court's decree it will be enforced against them through the court's power to punish for contempt; they may be imprisoned or fined and dispossessed by force if necessary. The action that begins with the decree and ends with its enforcement is obviously direct government action."

". . . Since courts are arms of government they are subject, like legislature and executive officers, to the restrictions that the Constitution imposes on government. . . . The Constitution does not exempt any kind of judicial action from the re-

* For previous discussion see THE AMERICAN CITY for May 1947, page 103.

ZONING *and* PLANNING NOTES

Edited by
NORMAN WILLIAMS, JR.
with the assistance of
FRANK B. WILLIAMS
and
EDWARD M. BASSETT

Miller Reorders

PERFORMANCE . . . NOT PRICE . . . BRINGS

FOR MORE MILLERS

Proof of the pudding is in the eating. Look at the many cities now expanding their metered areas who "come back for more MILLERS" . . . ample proof of dependability and satisfactory performance over the past years.

Cities	Installed Millers	Ordered 1946-47	Cities	Installed Millers	Ordered 1946-47
Pocatello, Idaho	419-1937	225	E. St. Louis, Ill.	525-1942	100
Muncie, Ind.	410-1937	36	Elizabeth, N. J.	525-1942	120
Salt Lake City	2128-1939	450	Everett, Wash.	850-1942	133
Brookville, Pa.	245-1940	35	Massillon, Ohio	400-1942	20
Canandaigua, N. Y.	236-1940	18	Meridian, Miss.	275-1942	100
Carlisle, Pa.	250-1940	210	Provo, Utah	275-1942	250
Freeport, Ill.	250-1940	250	Union City, Tenn.	200-1942	45
Lewiston, Idaho	172-1940	100	Vallejo, Cal.	650-1942	340
McConnellsburg, Pa.	75-1940	22	Pasco, Wash.	150-1943	14
Ogden, Utah	810-1940	400	Anderson, S. C.	240-1945	150
Somerset, Pa.	188-1940	73	Blairsville, Pa.	106-1945	22
Amsterdam, N. Y.	285-1941	150	Bradford, Pa.	340-1945	43
Coraopolis, Pa.	162-1941	45	Corvalis, Ore.	575-1945	25
Eau Claire, Wis.	336-1941	75	Dyersburg, Tenn.	275-1945	25
Eugene, Ore.	145-1941	595	Florence, S. C.	395-1945	36
Greeneville, Tenn.	175-1941	25	Kennewick, Wash.	130-1945	39
Macomb, Ill.	216-1941	25	Minot, N. D.	350-1945	181
Punxsutawney, Pa.	157-1941	117	Rhinelander, Wis.	175-1945	44
S. Ste. Marie, Mich.	200-1941	46	Sacramento, Cal.	1200-1945	1140
St. Petersburg, Fla.	470-1941	260	Santa Rosa, Cal.	510-1945	310
Titusville, Pa.	219-1941	50	Sumter, S. C.	150-1945	80
Warren, Ohio	497-1941	25	Wenatchee, Wash.	360-1945	185
Clarion, Pa.	100-1942	55	Medford, Ore.	553-1946	57

835 NO. WOOD STREET **DUNCAN METER CORP.** CHICAGO 22, ILL.

quirements of due process of law. . . . A judicial decree which would be invalid if it had legislative sanction is not validated by lack of legislative sanction . . . such restrictions are not less arbitrary and unreasonable, and not more conducive to the general welfare, when private persons acting without legislative sanction have attempted to impose them for private purposes. . . . It is strangely inconsistent to hold as this court does that although no legislature can authorize a court, even for a moment, to prevent Negroes from acquiring and using particular property, a mere owner of property at a given moment can authorize a court to do so for all time. Either the due process clauses of the Constitution do not forbid governments to prevent Negroes from acquiring and using particular property, in which case they do not forbid courts to enforce racial restrictions which statutes have imposed; or these clauses do forbid governments to prevent Negroes from acquiring and using particular property, in which case they forbid courts to enforce racial restrictions which covenants have imposed."

In this section Justice Edgerton also disposed of the traditional argument which would justify segregation because it can be worked both ways:

"It has been contended that enforcement of covenants which exclude a race from a neighborhood does not involve discrimination because it permits reciprocity. This amounts to saying that if Negroes are excluded from decent housing they may retaliate by excluding whites from slums."

The Civil Rights Act

One section of the Civil Rights Act (originally part of the Reconstruction legislation) provides that

"All citizens of the United States shall have the same right, in every State and Territory, as is enjoyed by white citizens thereof to inherit, purchase, lease, sell, hold, and convey real and personal property."

As Mr. Justice Edgerton pointed out, the language quoted squarely covers the case of enforcing racial covenants; and

"A statute which declares or confers a right means, if it means anything, that courts shall recognize and protect the right."

Moreover, this right to buy a home and live there, without being subjected to discrimination as to color, was recognized as one of the most important guarantees in the Civil Rights Act.

Illegal Restraints on Alienation

Various criteria for enforcing covenants, as listed by the American Law Institute in the Restatement of Property, were reviewed briefly in the present context. Admittedly, a neighboring landowner's action to enforce such a restriction fulfills one of the suggested requirements, for he does have some interest in the outcome. However, the situation was unfavorable as to all the other criteria mentioned: the covenants in this case were unlimited in duration; the number of persons excluded was enormous, amounting to about one-quarter of the population of the District; the forbidden conveyances would otherwise be widely used, since often a higher price may be obtained on border-line property by sales to Negroes; and the purpose sought can hardly be described as worthwhile, when a legislature is constitutionally forbidden to accomplish it.

Public Policy

In the section on public policy Mr. Justice Edgerton established several points. As far as preventing racial conflict is concerned, obviously the two "races" do live together without riots resulting, in thousands of border-line areas—including, for that matter, the block involved in the present litigation. The familiar facts on overcrowding of Negro families were then reviewed, with particular emphasis on the role of racial covenants in sharply limiting the available supply of housing—and this obviously does increase racial tension. Finally, the opinion reviewed racial covenants in the broadest light, as a partial failure of democracy, which presents a great danger to our prestige abroad. At the end of the dissent, the basic issue in all these cases is restated simply:

"The question is whether law should affirmatively support and enforce racial discrimination."

The best commentary on the majority opinion is contained in the dissent's comparison of the covenants and the injunctions. As noted in the previous column on racial covenants, anti-Negro covenants have traditionally taken two different forms, covenants against sales to and those against use by Negroes; and in some states the former are invalid, but the latter are enforced. In this case the covenants merely forbade any type of sale or conveyance to a Negro, without any mention of use or occupation. However, the injunctions upheld here not only voided the sales but went on to order the colored purchasers to remove themselves and their belongings from the land.

Two Michigan Cases

MICHIGAN. *Northwest Civic Association* v. *Sheldon*, 27 North Western (2d) 36 (Michigan Supreme Court, April 17, 1947).

The Security Land Company had developed a residential subdivision in Detroit; and as one element of its plan, covenants provided that the "premises shall not be sold nor leased to nor occupied by any person other than one of the Caucasian race." However, by inadvertance the racial covenants were omitted as to 28 of the 338 lots. Up to date the subdivision had managed to continue as a lily-white area. In the present case, a wife negotiated the purchase of a lot not covered by racial covenants, and was told of the general scheme; and after the couple moved in it appeared that the husband was a Negro. The complaint was brought by four neighbors and the Northwest Civic Association, a non-profit corporation organized for the purpose (among others) of enforcing real estate restrictions in this and nearby subdivisions.

The opinion relied on previous Michigan decisions—including those discussed earlier in this column—and on *Corrigan* v. *Buckley*, as foreclosing the issue. Although as to the lot in question there was no covenant to enforce, the Court approved a decree forbidding the Negro from occupying and using the land, on the ground that a general plan commonly known is binding and enforceable on all parties in interest. However, the Court did modify the decree by striking out a provision—which would have had no basis in the covenant, if one existed—that the Negro should not "enter upon" the premises. The defendants also argued that, since the corporation received its powers from the state, it had no power to make or enforce such a restriction; but the Court stated generally that a corporation had the same power to make contracts as an individual.

MICHIGAN. *Mrsa* v. *Reynolds*, 27 North Western (2d) 40 (Michigan Supreme Court, April 17, 1947).

The opinion in this racial covenant case leaned on precedent as hard as most other decisions in this field, but with one interesting angle. The covenant forbade use or occupancy "by people of the African race," and the defendants entered the unusual argument that the African race did not necessarily include colored persons or Negroes. In a long series of definitions of "African race" and "Negro," the Court saw fit to end up the argument for enforcing racial covenants by a quotation from the preliminary Emancipation Proclamation by Abraham Lincoln.

On June 30th the United States Supreme Court agreed to review the constitutional questions raised in the Michigan and Missouri cases discussed in THE AMERICAN CITY for May 1947. The problem should, therefore, be definitively passed on sometime next winter.

Piecemeal Changes in Zone Boundaries

ALABAMA. *Johnson* v. *City of Huntsville*, 29 Southern (2d) 342 (Alabama Supreme Court, March 6, 1947).

In this case a residential zone, inhabited by whites, was situated across a creek from an area inhabited by Negroes and unzoned. When construction of a laundry and dry-cleaning establishment was already started in the latter area, the residential zone was extended to include that district in order to forbid such construction. However, the Alabama zoning statute's requirement that zoning should be done in accordance with the comprehensive plan was held to forbid such piecemeal zoning.

Lighting Survey

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15th Street, Kansas City, Mo., after replacing 6000-lumen upright luminaires with new 15,000-lumen G-E Form 101-AD luminaires.

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Already, 3,857 new luminaires are being installed on the 40 miles of streets that account for 85 per cent of all fatal night accidents. Also in progress are the lighting of all unlighted intersections and the replacement of gas lights. Detail plans of the remainder of the city are being prepared on strip maps.

This complete modernization program is the end result of a survey started in 1943 by Mr. T. J. Seburn, Traffic Engineer. In the survey, the city was assisted by the Kansas City Power & Light Company, and by lighting specialists of General Electric.

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General Electric Lighting Specialists will be glad to work with you, too—in collaboration with the electric service company, if one is involved—to work out requirements for a single corner or an entire city. These specialists are located in G-E offices throughout the country.

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GOOD STREET LIGHTING BUILDS GOOD WILL

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452-51

LEGAL NOTES and DECISIONS

Prepared by
NATIONAL INSTITUTE
of
MUNICIPAL LAW OFFICERS

CHARLES S. RHYNE
General Counsel

City Employes—Discharge by City Commission—Validity When Commissioner Absent from Hearings

In action to review dismissal of City of Garfield water superintendent by city water commission, held that such dismissal was invalid where Commissioner, twice absent from hearings, participated in dismissal. *McAlpine* v. *Garfield Water Commission*, 52 Atl. (2d) 759 (N. J. Apr. 24, 1947).

Defense Plant Corporation—Subject to Municipal Lien Act

Where property of Defense Plant Corporation was subjected to Pennsylvania taxation, held that corporation was subject to Municipal Lien Act because of necessity of tax uniformity, notwithstanding exemption contained in Lien Act of "property owned by the United States." *Borough of Homestead* v. *Defense Plant Corporation*, 52 Atl. (2d) 581 (Pa., Mar. 24, 1947).

Elections—Amendment of City Charter—Insufficiency of Description of Amendment

Where official ballot in special election to amend City of Gainesville charter contained only the words "for and against the amendment" held that such ballot was insufficient and election based thereon was invalid. *Turner* v. *Lewis*, 201 S.W. (2d) 85 (Tex. Civ. App., Mar. 14, 1947). *Reh. den.* Apr. 11, 1947.

Excavations—Ordinance Prohibiting Without Permit—Extension of After Adoption of Ordinance

In conviction for violation of building code prohibiting excavations in city, held that operator of sand and gravel business could not extend his excavation to an area not yet excavated but was limited to excavation in area at the time ordinance was enacted. *People* v. *Gerus*, 69 N. Y. S. (2d) 283 (N. Y., Nassau Co., May 14, 1942).

Hotels—Authority of City to Construct—Public Purpose

In action to restrain city from issuing bonds and levying taxes for construction of hotel, held that statute authorizing city to acquire hotel accommodations is unconstitutional as violating the provision that taxes shall be levied for a public purpose. *Nash* v. *Town of Tarboro*, 42 S. E. (2d) 209 (N. C., Apr. 9, 1947).

Ice Cream—Ordinance Prohibiting Sale or Peddling of in Streets Declared Invalid

Where city ordinance prohibited sale at retail of frozen desserts in city streets, held that such ordinance was unconstitutional as arbitrary interference with lawful business. *Frecker* v. *City of Zanesville*, 72 N.E. (2d) 477 (Ohio, Ct. Com. Pleas, Muskingum Co., Apr. 1, 1947).

Incorporation by Reference—Validity of Ordinance When Incorporated Document Never Read

Where building code, adopted by reference, had never been read by city law-making body, nor recorded in city clerk's office, held that ordinance adopting such code was invalid. *City of Hazard* v. *Collins*, 200 S. W. (2d) 933 (Ky. App., Mar. 28, 1947).

Interstate Commerce—Taxation of Goods Remaining in Original Packages

Where 65% of goods imported from foreign country remained in original package in hands of importer and remained that way until distributed in accordance with instructions from another state, held that such goods were not subject to New Jersey taxation. *S. B. Penick & Co.* v. *Division of Tax Appeals*, 52 Atl. (2d) 421 (N. J. Sup. Ct., Apr. 11, 1947).

Noise—Use of Sound Trucks Prohibited—Trenton Ordinance Upheld

In conviction for violation of ordinance of City of Trenton prohibiting unnecessary noise through use of sound trucks, held that ordinance does not deprive freedom of speech or of assembly. *Kovacs* v. *Cooper*, 52 Atl. (2d) 806 (N. J., Apr. 24, 1947).

Notice of Claim—Service Upon Corporation Counsel Necessary

Where plaintiff, in suing city, failed to serve notice of intention to sue upon Corporation Counsel, held that complaint would be dismissed upon city's motion. *Byrnes* v. *City of New York*, 69 N. Y. S. (2d) 375 (N. Y. City Ct. Mar. 12, 1945).

Ordinances—Publication in Final Form

Where ordinance authorizing bond issue for municipal public utility project was published in full more than a week before enactment, but subsequent minor amendments were made affecting only bond feature, held that such ordinance could not be set aside on ground that it was not published in final form a week before enactment. *Charls* v. *City of Cleveland*, 72 N. E. (2d) 770 (Ohio App., Feb. 17, 1939).

Parking Meters—Competitive Bidding—Alteration in Specifications By Bidder

In action to annul award made to parking meter company, held that material change made in specifications by company was sufficient ground to reject contract as bids must conform substantially to advertised plans and specifications. *Coller* v. *City of Saint Paul*, 26 N. W. (2d) 835 (Minn., Mar. 21, 1947). *Reh. den.* May 2, 1947.

Parks—Carrying of Placards in—Permit Required

In conviction for carrying placards in City of New York park without permit, held that regulation of Department of Parks prohibiting carrying of placards without permit is valid and does not interfere with free speech or assembly. *People* v. *Nahman*, 70 N. Y. S. (2d) 29 (N. Y. Ct. Spec. Ses., Apr. 29, 1947).

Railroads—Power of City to Require Crewmen on Engine—Ordinance Invalid

In action by railroad company to have city ordinance declared invalid, held that ordinance which required additional crewmen on engines of locomotives when crossing city streets was invalid in view of absence of statutory authority for such regulation. *Louisville & N. R. Co.* v. *City of Hazard*, 200 S. W. (2d) 917 (Ky. App., Mar. 25, 1947).

Sales Tax—Applicability to Food Sold in Industrial Plant by Moving Trucks

Where food was sold from moving trucks in industrial plant which were pushed through aisles and which were stopped at certain places to permit purchases, held that such sales were of food "sold for consumption on premises" and hence were not subject to state sales tax. *Peters Cafeteria* v. *Glander*, 72 N. E. (2d) 688 (Ohio Bd. Tax App., Apr. 1, 1947).

Veterans Housing—Validity of Municipal Expenditures for

In action to determine validity of city bonds issued to defray cost of veterans' temporary housing program, held that statute authorizing cities to establish veterans' temporary housing programs is constitutional and hence city bonds issued pursuant to such program are valid. *Franco* v. *City of New Haven*, 52 Atl. (2d) 866 (Conn., Apr. 16, 1947).

U. S. Supreme Court Decides California Case

On June 23, 1947, the Supreme Court of the United States rendered a decision of great importance when it handed down its opinion in the case of *United States* v. *California*, involving the title of the State of California to the tidelands underlying the three-mile ocean belt extending beyond the low-water mark. By a six to two decision, the Court held that the Federal Government has paramount rights to such lands and denied the right of the State to exercise ownership powers over these lands. The decision rested primarily upon the theory that these tidelands are of vital importance to the nation and "its desire to engage in commerce and to live in peace with the world" and that the state is unequipped constitutionally to exercise the responsibilities which dominion over such lands entails. That Congress would protect against any injustices caused by the ruling supplied the answer to the query as to the jeopardizing of the vast investments in improvements already made by states, cities and others on such lands.

Dissenting opinions were filed by Justices Reed and Frankfurter. Mr. Justice Reed was of the belief that the majority opinion led to the conclusion that the thirteen original states owned the lands under the seas to the three-mile limit and that since the State of California was admitted "on an equal footing" with the original states, it should have the same title. Mr. Justice Frankfurter emphasized the distinction between the paramount rights of the United States over such tidelands, and the rights of ownership.

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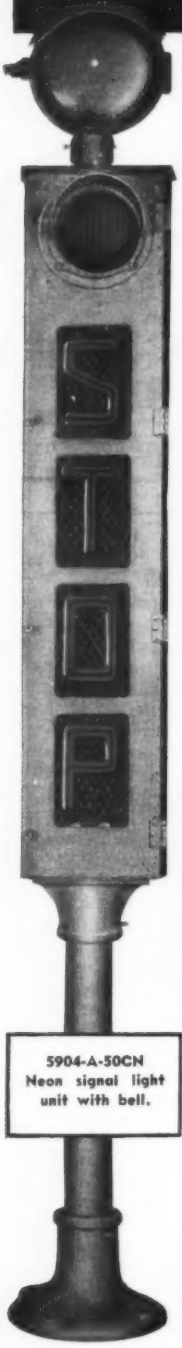

5904-A-50CN
Neon signal light unit with bell.

Fig. 3—Spring mounted vertical lift or bascule bridge lamp.

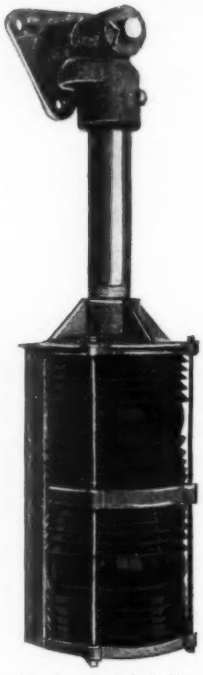

Fig. 2 — Bascule bridge lamp. 180° lenses.

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Fig. 6—Fender or channel marker. 360° lens — any color.

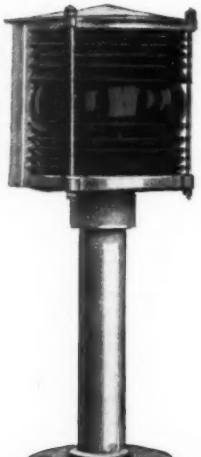

Fig. 1 — Standard pier lamps. 180° lens — any color.

Fig. 5—Drawbridge lamp. Four 90° lenses with visors.

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Conventions—When and Where

Conventions listed this month for the first time are indicated by an asterisk (*)

Aug. 14-15—Washington, D. C.
AMERICAN CONGRESS ON SURVEYING AND MAPPING. Annual Meeting (Statler Hotel). Exec. Sec., Richard T. Evans, P. O. Box 470, Benjamin Franklin Station, Washington 4, D. C.

Aug. 18—New York, N. Y.
EASTERN ASSOCIATION OF FIRE CHIEFS. Annual Convention (Pennsylvania Hotel). Sec., Chas. E. Clark, Box 271, Wayne, Pa.

Aug. 18-22—Cleveland, Ohio
NATIONAL SHADE TREE CONFERENCE. Annual Convention (Hotel Cleveland). Sec.-Treas., L. C. Chadwick, Ohio State College, Columbus, Ohio.

Aug. 19-22—New York, N. Y.
INTERNATIONAL ASSOCIATION OF FIRE CHIEFS. Annual Convention (Pennsylvania Hotel). Exec.-Sec., Daniel B. Tierney, 8 Robbins Road, Arlington, Mass.

Aug. 24-26—Wrightsville Beach, N. C.
NORTH CAROLINA LEAGUE OF MUNICIPALITIES. Annual Meeting. Exec. Sec., Mrs. Davetta L. Steed, 704 Raleigh Bldg., Raleigh, N. C.

***Aug. 25-27—State College, Pa.**
PENNSYLVANIA SEWAGE WORKS ASSOCIATION. Annual Meeting (Nittany Lion Inn). Sec.-Treas., Bernard S. Bush, Kirby Health Center, Wilkes-Barre, Pa.

Aug. 27-29—State College, Pa.
PENNSYLVANIA WATER WORKS OPERATORS' ASSOCIATION. Annual Meeting. Sec., I. M. Glace, Harrisburg, Pa.

Sept. 4-5—Plattsburg, N. Y.
AMERICAN WATER WORKS ASSOCIATION—NEW YORK SECTION. Fall Meeting (Hotel Champlain). Sec., R. K. Blanchard, 50 W. 50th St., New York, N. Y.

Sept. 8-10—New York, N. Y.
NATIONAL INSTITUTE OF GOVERNMENT PURCHASING. Annual Conference (Hotel Pennsylvania). Exec. Dir., Albert H. Hall, 730 Jackson Place, NW., Washington 6, D. C.

***Sept. 10-12—Marquette, Mich.**
MICHIGAN MUNICIPAL LEAGUE. Annual Meeting (Northland Hotel). Dir., John Huss, 205 S. State St., Ann Arbor, Mich.

Sept. 11-12—Albany, N. Y.
AMERICAN PUBLIC WELFARE ASSOCIATION. Northeastern Regional Meeting. Dir., Howard L. Russell, 1313 E. 60th St., Chicago, Ill.

Sept. 11-12—Washington, D. C.
CHAMBER OF COMMERCE OF THE UNITED STATES. Businessmen's Conference on Urban Problems (National Chamber Bldg.). Gen. Mgr., Ralph Bradford, 1615 H St., NW., Washington 6, D. C.

Sept. 14-17—Roanoke, Va.
LEAGUE OF VIRGINIA MUNICIPALITIES. Annual Meeting. Sec., Harold I. Baumes, 902 Travelers Bldg., Richmond, Va.

Sept. 15-27—Cambridge, Mass.
MASSACHUSETTS INSTITUTE OF TECHNOLOGY AND AMERICAN SOCIETY OF PLANNING OFFICIALS. Conference on City and Regional Planning. Dir., Prof. Frederick J. Adams, Massachusetts Institute of Technology, Cambridge 39, Mass.

Sept. 16-19—Boston, Mass.
NEW ENGLAND WATER WORKS ASSOCIATION. Annual Meeting (Statler Hotel). Sec., Joseph C. Knox, 609 Statler Bldg., Boston, Mass.

***Sept. 17-19—Louisville, Ky.**
KENTUCKY MUNICIPAL LEAGUE. Annual Meeting (The Kentucky Hotel). Exec. Sec., Carl B. Wachs, University of Kentucky, Lexington 29, Ky.

Sept. 17-19—Atlanta, Ga.
THE GEORGIA WATER AND SEWAGE ASSOCIATION. Annual meeting of Short School for Plant Operators (School of Technology). G. R. Frith, Department of Public Health, Atlanta, Ga.

***Sept. 18-20—Bay City, Mich.**
AMERICAN WATER WORKS ASSOCIATION—Michigan Section. Annual Meeting (Wenonah Hotel). Sec., R. J. Faust, Chief, Div. of Water Supply, State Dept. of Health, Lansing 4, Mich.

Sept. 19-20—Superior, Wis.
WISCONSIN CHIEFS OF POLICE ASSOCIATION. Annual Convention (Hotel Androy). Exec. Sec., Walter H. Wagner, Sheboygan, Wis.

Sept. 21-25—Duluth, Minn.
INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE. Annual Conference (Duluth Hotel). Exec. Sec., Edward J. Kelly, 918 F. St., NW., Washington, D. C.

***Sept. 22-24—Louisville, Ky.**
AMERICAN WATER WORKS ASSOCIATION—Kentucky-Tennessee Section. Annual Meeting (Brown Hotel). Sec., R. P. Farrell, Director, Div. of San. Eng., State Dept. of Public Health, 420 6th Ave., N., Nashville 3, Tenn.

***Sept. 22-24—Fort Worth, Texas**
LEAGUE OF TEXAS MUNICIPALITIES. Annual Meeting (Texas Hotel). Exec. Dir., E. E. McAdams, 2220 Guadalupe St., Austin, Texas.

Sept. 22-25—San Francisco, Calif.
LEAGUE OF CALIFORNIA CITIES. Annual Meeting (Fairmont and Mark Hopkins Hotels). Exec. Sec., Richard Graves, Hotel Claremont, Berkeley, Calif.

Sept. 22-26—New York, N. Y.
AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS. Annual Meeting (Waldorf-Astoria). Exec. Sec., H. H. Hale, 1220 National Press Bldg., Washington, D. C.

***Sept. 25-26—Denver, Colo.**
AMERICAN WATER WORKS ASSOCIATION—Rocky Mountain Section. Annual Meeting (Cosmopolitan Hotel). Sec., O. J. Ripple, 710 Colorado Bldg., Denver, Colo.

Sept. 29-30—Little Rock, Ark.
AMERICAN PUBLIC WELFARE ASSOCIATION. Southwestern Regional Meeting. Dir., Howard L. Russell, 1313 E. 60th St., Chicago, Ill.

Sept. 29-Oct. 1—Los Angeles, Calif.
NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS. Annual Meeting (Biltmore Hotel). General Counsel, Charles S. Rhyne, 730 Jackson Place, NW., Washington, D. C.

***Sept. 30-Oct. 1—Columbus, Ohio**
AMERICAN WATER WORKS ASSOCIATION—Ohio Section. Annual Meeting (Deshler-Wallick Hotel). Sec., R. P. Fisher, Sales Eng., Wallace & Tiernan Co., Inc., 812 Perry Payne Bldg., Cleveland 13, Ohio.

Oct. 1-2—Grand Rapids, Mich.
INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION, INC. Annual Meeting (Pantlind Hotel). Sec., Irvin Shulsinger, 8 E. 41st St., New York 17, N. Y.

Oct. 1-4—Detroit, Mich.
INSTITUTE OF TRAFFIC ENGINEERS. Annual Meeting (Hotel Fort Shelby). Exec. Sec., Robert S. Holmes. 212 Strathcona Hall, Yale University, New Haven, Conn.

***Oct. 2-3—Columbus, Ohio**
OHIO CONFERENCE ON SEWAGE TREATMENT. Annual Meeting (Deshler-Wallick Hotel). Sec.-Treas., L. B. Barnes, 441 S. Prospect St., Bowling Green, Ohio.

***Oct. 2-3—Bluefield, W. Va.**
AMERICAN WATER WORKS ASSOCIATION—West Virginia Section. Annual Meeting (West Virginian Hotel). Sec., J. B. Harrington, Director, Div. of San. Eng., State Dept. of Health, Charleston, W. Va.

Oct. 5-8—Jacksonville, Fla.
AMERICAN PUBLIC WORKS ASSOCIATION. Annual Meeting. Exec. Dir. D. F. Herrick, 1313 E. 60th St., Chicago, Ill.

Oct. 5-9—Coronado, Calif.
INTERNATIONAL CITY MANAGERS' ASSOCIATION. Annual Meeting (Hotel del Coronado). Exec. Sec., Clarence E. Ridley, 1313 E. 60th St., Chicago, Ill.

Oct. 6-8—Niagara Falls, Ont.
THE CANADIAN INSTITUTE ON SEWAGE AND SANITATION. Annual Meeting (General Brock Hotel). Exec. Sec., Dr. A. E. Berry, Parliament Bldg., Toronto, Ont.

Oct. 6-10—Chicago, Ill.
NATIONAL SAFETY COUNCIL. Annual Meeting (Stevens Hotel). Exec. Vice-pres., R. L. Forney, 20 North Wacker Drive, Chicago 6, Ill.

Oct. 6-11—Atlantic City, N. J.
AMERICAN PUBLIC HEALTH ASSOCIATION. Annual Meeting. (Convention Hall). Exec. Sec., Reginald M. Atwater, 1790 Broadway, New York, N. Y.

Oct. 8-10—Atlantic City, N. J.
PENNSYLVANIA WATER WORKS ASSOCIATION. Sec.-Treas., Mrs. Ethel M. Markley, 510 Telegraph Building, Harrisburg, Pa.

Oct. 8-11—New York, N. Y.
GOVERNMENTAL RESEARCH ASSOCIATION. Annual Conference (Hotel Commodore). Sec., G. Gordon Tegnell, 30 Rockefeller Plaza, New York 20, N. Y.

***Oct. 9-11—Cedar Rapids, Iowa**
AMERICAN WATER WORKS ASSOCIATION—Iowa Section. Annual Meeting (Montrose Hotel). Sec., H. V. Pedersen, Supt., Water Works, Municipal Bldg., Marshalltown, Iowa.

Oct. 12-15—Colorado Springs, Colo.
NATIONAL ASSOCIATION OF COMMERCIAL ORGANIZATION SECRETARIES. Annual Meeting (Antlers Hotel). Exec. Sec., Elizabeth Glenn, 1615 H Street, N. W., Washington 6, D. C.

Oct. 13-15—Amarillo, Texas
AMERICAN WATER WORKS ASSOCIATION—SOUTHWEST SECTION. Annual Meeting. Sec., L. A. Jackson, Little Rock Water Works, Little Rock, Ark.

***Oct. 13-15—La Grande, Ore.**
LEAGUE OF OREGON CITIES. Annual Convention. Sec., Herman Kehrli, University of Oregon, Eugene, Ore.

Oct. 13-17—New York, N. Y.
NATIONAL RECREATION ASSOCIATION. Annual Meeting (Hotel New Yorker). Sec., Howard Braucher, 315 Fourth Ave., New York 10, N. Y.

Oct. 16-17—Ocean City, Va.
VIRGINIA INDUSTRIAL WASTES AND SEWAGE WORKS ASSOCIATION. Annual Meeting (Nansemond Hotel). Sec., A. H. Passler, 815 East Franklin St., Richmond 19, Va.

***Oct. 23-25—Milwaukee, Wis.**
AMERICAN WATER WORKS ASSOCIATION—Wisconsin Section. Annual Meeting (Hotel Schroeder). Sec., L. A. Smith, Supt., Water Works, Madison, Wis.

Oct. 27-28—Jefferson City, Mo.
MISSOURI WATER AND SEWERAGE CONFERENCE. Annual Meeting (Governor Hotel). Sec.-Treas., Warren A. Kramer, State Office Bldg., Jefferson City, Mo.

(*Continued on Page* 133)

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Conventions—When and Where

(*Continued from Page* 131)

Nov. 2-6—New Orleans, La.

AMERICAN MUNICIPAL ASSOCIATION. Annual Meeting. Exec. Dir., Earl D. Mallery, 1313 E. 60th St., Chicago, Ill.

Nov. 3-5—Atlanta, Ga.

AMERICA WATER WORKS ASSOCIATION—SOUTHEASTERN SECTION. Annual Meeting. Sec., B. P. Rice, Reconstruction Finance Corp., Bond Service Division, Healey Bldg., Atlanta, Ga.

***Nov. 6-8—Atlantic City, N. J.**

AMERICAN WATER WORKS ASSOCIATION—New Jersey Section. Annual Meeting (Claridge Hotel). Sec., C. B. Tygert, Box 178, Newark, N. J.

***Nov. 10-12—Greensboro, N. C.**

NORTH CAROLINA SEWAGE WORKS ASSOCIATION. Annual Meeting (Sedgfield Inn) . Sec. Treas., George S. Moore, P. O. Box 125, Albemarle, N. C.

***Nov. 10-12—Greensboro, N. C.**

AMERICAN WATER WORKS ASSOCIATION—North Carolina Section. Annual Meeting (Sedgfield Inn). Sec., G. S. Moore, Supt., Water & Light Dept., Albemarle, N. C.

Nov. 12-14—Atlantic City, N. J.

NEW JERSEY STATE LEAGUE OF MUNICIPALITIES. Annual Conference. Exec. Sec., James J. Smith, 808 Trenton Trust Bldg., Trenton, N. J.

Nov. 12-14—Pittsburgh, Pa.

ENGINEERS SOCIETY OF WESTERN PENNSYLVANIA. Annual Meeting (William Penn Hotel). Chairman, H. M. Olson, 171 Longue Vue Drive, Pittsburgh, Pa.

***Nov. 17-18—Roanoke, Va.**

AMERICAN WATER WORKS ASSOCIATION—Virginia Section. Annual Meeting (Hotel Roanoke). Sec., W. H. Shewbridge, Asst. Engr., State Health Dept., 708 State Office Bldg., Richmond 19, Va.

Nov. 17-20—New York, N. Y.

NATIONAL ASSOCIATION OF HOUSING OFFICIALS. Annual Meeting (Hotel New Yorker). Exec. Dir., Coleman Woodbury, 1313 E. 60th St. Chicago, Ill.

Nov. 17-20—Dallas, Texas

CIVIL SERVICE ASSEMBLY OF THE UNITED STATES AND CANADA. Annual Meeting (Baker Hotel). Dir., James M. Mitchell, 1313 E. 60th St., Chicago 37, Ill.

Nov. 19-21—Washington, D. C.

AMERICAN WATER WORKS ASSOCIATION—Four States Section. Annual Meeting. Sec. Treas., W. A. Welch, 748 Public Ledger Bldg., Philadelphia, Pa.

Nov. 20—Boston, Mass.

NEW ENGLAND WATER WORKS ASSOCIATION. Annual Meeting (Statler Hotel). Sec., Joseph C. Knox, 609 Statler Bldg., Boston, Mass.

***Nov. 20-22—St. Petersburg, Fla.**

AMERICAN WATER WORKS ASSOCIATION — Florida and Cuban Sections. Annual Meeting Sec. Florida Section, A. P. Black, Prof. of Chemistry, Univ. of Florida, Gainesville, Fla.— Sec. Cuban Section, Lauren H. Daniel, Box 531, Havana, Cuba.

Dec. 1-6—Washington, D. C.

HIGHWAY RESEARCH BOARD. Annual Meeting (National Academy of Sciences). Dir., Roy W. Crum, 2101 Constitution Ave. NW., Washington 25, D. C.

Dec. 18—Boson, Mass.

NEW ENGLAND WATER WORKS ASSOCIATION. Annual Meeting (Statler Hotel). Sec., Joseph C. Knox, 609 Statler Bldg., Boston, Mass.

Recent City Manager Appointments

RAY BADGER has been appointed first manager of Pittsfield, Me.

WOODBURY E. BRACKETT, manager of Washburn, Me., 1931-34; Oakland, Me., 1935-38; Middlebury, Vt., 1938-39; and at Houlton, Me., since 1939, has become first manager of Montpelier, Vt.

H. L. BURDETTE, one-time manager of Monroe, N. C., and manager of Kings Mountain, N. C., since 1940, has accepted the managership of Hickory, N. C.

J. J. DEAN, former assistant at Albany, Ga., is first manager of Bessemer, Ala.

KELLY DEATON, former member of the Louisville Housing Authority and the Kentucky State Board of Health, has been appointed manager of Hazard, Ky., to succeed Henry Spalding.

C. H. HELMS, manager of Morganton, N. C., since 1944, and at Tryon, N. C., from 1931-44, has become first manager of New Bern, N. C.

VICTOR C. HOBDAY, formerly with the Kentucky State Department of Revenue, has become manager of Paducah, Ky.

HORACE HODNETT has been appointed manager of Danforth, Me., following the death of former Manager E. P. Dyer.

T. E. HINSON, manager of Chapel Hill, N. C., since 1944, has been appointed manager of High Point, N. C.

J. LANGFORD, former assistant to the city manager, is now acting manager of Alachua, Fla.

A. T. LUNDBERG, acting manager, has been appointed county manager of Arlington County, Va.

THOMAS F. MAXWELL, administrative assistant to Manager Cookingham of Kansas City, becomes the first manager of University City, Mo.

H. C. MCCLINTOCK, city manager of Boulder, Colo., since 1932, will become first manager of Hutchinson, Kans., September 1.

W. I. MCGHEE has been appointed first manager of Pearisburg, Va.

C. C. MILLER was reappointed manager of Woodward, Okla.

JAMES F. SHURTLEFF, manager of Mansfield, Mass., since 1943, has become first manager of Brookfield, Ill.

BILL N. TAYLOR, former manager of Longview, Tex., 1928-40; Port Arthur, 1940-45; McAllen, 1945-46; Beaumont, 1946-47, has been appointed manager and consultant at Pelly, Texas, which recently annexed Baytown and Goose Creek.

GERALD L. WILKINS, manager of Liberal, Kans., since 1946, has become manager of Newton, Kans.

ROY L. WILLIAMSON, manager of Burlington, N. C., since 1945, has accepted the managership of Rocky Mount, N. C.

C. O. HUNTRESS, former assistant to the manager, has been appointed acting manager of Bartlesville, Okla.

CLARENCE E. RIDLEY
Executive Director
International City Managers' Association
Chicago, Ill.

Ohio Urban Bill Defeated

CINCINNATI'S bold plans for riverfront development and slum clearance, described in the January issue of THE AMERICAN CITY, received a dismaying blow when the Ohio urban redevelopment bill was recently defeated in the state legislature.

The bill's passage was blocked primarily as a result of arguments by attorneys for the building and loan associations, although its approval was urged by insurance company representatives interested in the investment possibilities of urban redevelopment projects.

The Municipal Bond Market

(Some sales of new issues reported in July issues of *The Bond Buyer*)

Amount	*Borrower and Purpose*	*Rate (%)*	*Term (Years)*	*Basis (%)*
$ 300,000	Omaha, Nebr., Park, Series 1947	1	5	.991
100,000	Albert Lea, Minn., Permanent Improvement	1.10	5¾ Avg.	1.099
87,000	Batavia, N. Y., Union Free School District.	1.20	5½ Avg.	1.134
195,000	Needham, Mass., Sewer	1.25	5½ Avg.	1.10
6,500	Corydon, Ind., Municipal Building	1.25	4½ Avg.	1.22
12,000	Hankinson, N. D., Electric Light and Power Plant	1.50	4 1/3 Avg.	1.447
5,000	Margaretville, N. Y., Village Hall Reconstruction	1.60	1-5 Ser.	1.55
18,605	West Point, Miss., Street Intersection	1.75	5 5/6 Avg.	1.623
60,000	Clintonville, Wis., Hospital	1.75	1-12 Ser.	1.232
25,000	Bryant, S. D., Water	2	6½ Avg.	1.819
400,000	Columbia City, Ind., Electric Utility Revenue	2	10¾ Avg.	1.961
385,000	Calcasieu Parish, La., Drainage	2.25	8 2/3 Avg.	2.449
1,000,000	Washington Suburban Sanitary District, Md., Water Main and Sewer Construction, Series 000	2.40	25½	2.381
13,000	Sonora, Calif., Improvement of 1947	2.75	1-13 Ser.	2.608
445,000	Prescot, Ariz., Water Revenue, First Issue	2.75	10/25 2/3 O.-A.	2.64
40,000	Marietta, Wis., Road	3	1-5 Ser.	2.146
100,000	Socorro, N. Mex., Water and Sewer Revenue	3.25	9 5/6/20 O.-A.	3.17

XUM

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Inaugurated late in 1945, this Service is now being used regularly by nearly 300 cities. It will enable you to receive immediate expert advice and reports on management problems in your town or city.

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It Also Includes

1. In addition to replies on specific inquiries, subscribing cities receive from one to 12 subscriptions (depending on size of the city) to the monthly journal *Public Management* published since 1919, and devoted to the improvement of municipal administration.

2. Cities also receive from one to 10 copies of the 1947 *Municipal Year Book*, the authoritative resume of the activities and statistical data for more than 2,000 American cities, published since 1934.

3. One copy each of special information reports issued monthly. Partial list of recent reports:

- How to Codify Municipal Ordinances
- Rules of Order for City Councils
- Trend Toward One-Man Police Cars
- Granting Sick Leave With Pay
- How to Reduce Insurance Costs
- Management of Motor Equipment
- Procedure in Establishing Merit System
- Personnel Rules and Regulations
- Water Charges Outside the City
- Improving Handling of Traffic Violations.

Cities Using It

Nearly 300 cities in 38 states ranging in size from 1,000 to 400,000 have subscribed to this Service. The number of subscribing cities in selected states are:

California	22 cities	Kansas	9 cities	Ohio	9 cities
Colorado	5 "	Maine	11 "	Texas	24 "
Florida	21 "	Michigan	32 "	Virginia	15 "
Georgia	12 "	Missouri	6 "	Wisconsin	10 "
Illinois	9 "	North Carolina	6 "	Canada	10 "

What It Costs

MIS is available to cities and towns on a subscription basis regardless of form of government. The fee varies with the size of the city from $20 for under 5,000 population to $400 for cities of 250,000 to 500,000. For more details and fee for your city write:

INTERNATIONAL CITY MANAGERS' ASSOCIATION

1313 East 60th Street **Chicago 37, Illinois**

Municipal and Civic Publications

Municipal Administration

THE TECHNIQUE OF MUNICIPAL ADMINISTRATION. —*Institute for Training in Municipal Administration. International City Managers' Association,* 1313 *E. 60th St., Chicago* 37, *Ill.* 1947. 601 *pp.* $7.50.

One of a series of eight volumes on various fields of municipal administration—including personnel, planning, finance, fire, public works, recreation, and police—this third edition of *The Technique of Municipal Administration* incorporates much new material based on administrative experience drawn from the users of the previous two editions.

One entirely new chapter on programming municipal services has been added, five chapters have been completely rewritten, and a number of changes have been made in most of the remaining chapters. The purpose of the volume, and of the related correspondence course which is available upon application to the Institute for Training in Municipal Administration, is to define the job of management in municipal administration and to suggest techniques and practices that will help municipal officials in management positions to perform their duties effectively. Techniques may vary in detail but management has many characteristics based upon common approaches to administrative problems. according to the Institute.

Safety Programs

COMMUNITY SAFETY—*Bureau of Public Administration, University of Washington, Seattle, Wash. Report No.* 72, 1947. *Mimeo.* 40 *pp.*

This publication includes a number of addresses and remarks delivered at the Safety Section of the Eleventh Annual Institute of Government. One of the outstanding papers is that on "Traffic Safety Through Modernized Lighting Techniques," by J. W. A. Bollong, Traffic Engineer, City of Seattle. This paper contains charts, diagrams, and suggestions for the design of traffic-safety lighting systems.

Other topics covered, all written by municipal officials and experts in the respective fields, are traffic-law enforcement, fire prevention and insurance rates, accident-prevention programs, on-the-job safety, and monetary profits through safety.

Living Memorials

LIVING WAR MEMORIALS FOR CALIFORNIA—*California State Reconstruction and Reemployment Commission,* 631 *J St., Fifth Floor, Sacramento* 14, *Calif.* 1947. 26 *pp. Single copies available without charge.*

An excellent, readable brochure which should be of great stimulus in promoting living war memorials in California municipalities and elsewhere. Governor Earl Warren states in the foreword that projects such as parks, recreation centers, playgrounds, hospitals, libraries, civic centers, and educational institutions all afford excellent opportunities for commemorating the deeds of our war heroes through improvement of public welfare.

Especially useful is the section entitled "How to Achieve a Memorial?" which contains useful ideas on how living memorials can be promoted and paid for.

Subdivision Regulations

SUBDIVISION RULES AND RECOMMENDATIONS FOR THE WICHITA AREA—*City Planning Commission,* 304 *City Building, Wichita* 2, *Kans.* 1947. 15 *pp.*

A carefully drawn set of subdivision regulations designed to aid subdividers in preventing errors in platting. Legislation passed in 1941 and 1943 permits the Wichita City Planning Commission to govern the subdivision of land within three miles of the city's corporate limits.

1947 Airport Plan

THE 1947 NATIONAL AIRPORT PLAN—*Civil Aeronautics Administration, U. S. Department of Commerce. Available from Superintendent of Documents, Government Printing Office, Washington* 25, *D. C.* 103 *pp.* 25 *cents.*

This publication contains for each state a list of those public airports, the development or improvement of which seems necessary within the next three-year period in order to accommodate the anticipated volume and flow of air traffic. Public airports at which no further development is considered necessary within the next three years have been omitted.

The plan includes 417 large airports (Class IV or larger), 3,850 smaller airports (Classes I, II and III), and 164 seaplane bases. Of the airports in the plan, 2,550 are entirely new, and 1,881 are existing public airports that will require certain additional improvements. The total estimated cost is $985,800,000.

An explanation is included of the method by which priorities will be assigned for the construction of the airports. Addresses of the regional and district airport offices of the Civil Aeronautics Administration are also given.

Facts on Transit

TRANSIT FACT BOOK, 1947—*The American Transit Association,* 292 *Madison Ave., New York* 17, *N. Y.* 46 *pp.*

This fifth annual edition covers the operations of the transit industry through 1946. The figures in the booklet cover the whole U. S. transit industry which includes electric street railways, elevated and subway lines, interurban electric railways, local motor bus lines, and trolley coach lines.

The graphs and charts are well prepared and aid in making the statistical material easier to assimilate.

Traffic Hazards

YOU BET YOUR LIFE—*The Travelers Insurance Companies, Hartford, Conn.* 1947. 31 *pp. Free distribution.*

This hard-hitting booklet brings home the seriousness of the traffic accident rate and should be of considerable aid to municipal officials interested in ready facts and figures on the problem.

Pictures of everyday situations, in which motorists and pedestrians frequently find themselves and still take chances in order to save minutes, vividly illustrate the point that gambling in traffic does not pay.

Municipal Insurance

MUNICIPAL INSURANCE PRACTICES—*Michigan Municipal League,* 205 *S. State St., Ann Arbor, Mich. Information Bulletin No.* 51. 1947. *Mimeo.* 18 *pp.* $1.00.

Compiled specifically for the City of Ann Arbor, this report and analysis contains information gathered from twenty-five municipalities of from 5,000 to 85,000 population in Michigan. Much of the material will be of general interest to other municipal officials.

Water Survey

CHEMICAL CHARACTER OF SURFACE WATERS OF NORTH CAROLINA—*By William L. Lamar. Prepared in cooperation with the Geological Survey of the United States Department of Interior. P. O. Box* 711, *Raleigh, N. C. Free.*

A total of 233 complete analyses showing the chemical character of surface water in North Carolina is contained in this report.

Water department officials in other cities may find the report's findings both interesting and helpful.

New Yearbook Edition

THE MUNICIPAL YEARBOOK, 1947.—*Clarence E. Ridley and Orin F. Nolting, Editors. International City Managers' Association.* 1313 *E. 60th St., Chicago* 37, *Ill.* 550 *pp.* $8.50 *if remittance accompanies order, otherwise* $9.

The fourteenth edition of the *Municipal Year Book,* which was released late in June, continues the tradition of the volume as a most valuable reference manual for municipal officials. As in past years, it provides discussions of the current problems of cities throughout the country, with facts and statistics on individual city activities, and with analyses of trends by population groups.

Two of the new sections in this edition indicate the current interest in the expanding fields of municipal hospital and airport management and financing. Other sections present new data on the extent and methods of police patrol of residential areas, and an analysis of the methods used by cities in charging areas outside the city for water and sewerage service.

Of major interest to municipal officials should be the data in the personnel, finance, and planning sections of the book. Information is available in these sections on city employe organizations, strikes, salaries, on non-property tax revenues and service charges, and on types of improvements required of subdivision developers before plats are approved.

Most of the regular features of the Year Book have been retained and brought up to date, including the sections on municipal reports, typical utility bills, parking lots and parking meters, assessed valuations and tax rates, court decisions affecting cities, debt trends, directories of officials, model municipal ordinances, etc.

Municipal Yardsticks

HOW GOOD IS YOUR CITY?—*Municipal League of Seattle.* 316 *Marion Bldg., Seattle* 4, *Wash.* 1947. 31 *pp.*

This report shows how Seattle's services match those in twelve other U. S. cities of similar population. The statistics are enlivened by the use of clever engravings and well-written and interesting text material.

Among the city services compared are fire and police protection, public schools and health, light and water supply systems, transit, public parks, and libraries, city planning, engineering, port facilities, and city employes. The statistics, compiled from a number of authoritative sources, should be of value to other organizations interested in preparing similar yardsticks for their particular cities.

Regional Planning

A SYMPOSIUM ON REGIONAL PLANNING—*Iowa Law Review, Volume* 32, *Number* 2, *January* 1947. *College of Law, Iowa City, Iowa.* 416 *pp.* $1.75 *per copy.*

Most of the articles in this symposium are intelligent, informative, and stimulating discussions of the progress and status of various phases of regional development. Myres S. McDougal, C. Herman Pritchett, and Morris Llewellyn Cooke have made especially valuable contributions to the symposium. The article by Mr. Cooke, "Plain Talk About MVA", gives the facts about current Missouri River projects, and shows the huge national stake in integrated development of the region's land and tributaries.

The last article in the symposium, however, by John M. Drabelle, Chief Engineer, Iowa Electric Light and Power Co., demonstrates perfectly the private-utility point of view which still remains the chief obstacle to fuller utilization of the country's power and water resources.

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St. Louis Plan

COMPREHENSIVE CITY PLAN, SAINT LOUIS, MISSOURI—*City Plan Commission, St. Louis, Mo. Harland Bartholomew, Engineer.* 1947. *Maps.* 77*pp.* $5.00.

The report, one of the most elaborate to have appeared in some time, offers a set of plans covering the most important physical needs of the city. It also includes the text of a proposed ordinance for giving full legal support to the City Plan, an ordinance which has subsequently been passed by the Board of Aldermen and approved by the Mayor.

A few of the highlights in the recommendations of the report may be summarized as follows: A critically needed complete revision of the badly outmoded zoning ordinance; a new pattern for utilization of the land within the city to the best advantage of all the people and of the community; housing—not only to provide the thousands of new family dwelling units in critical demand, but to wipe out the obsolescent blighted areas and the costly decayed slums; a concrete proposal for a minimum housing standards ordinance, to put authority in the hands of the city to require decent habitations; a comprehensive system of homogeneous neighborhoods, to foster the welfare of every residential and industrial area.

A Capital Improvement Program

CAPITAL IMPROVEMENT PROGRAM FOR BALTIMORE—*Commission on City Plan, 400 Municipal Building, Baltimore 2, Md.* 1947. 116 *pp.* $2.00.

Prepared under the direction of Thomas F. Hubbard, Chairman, Commission on City Plan, this report describes procedures and makes recommendations which should be of value to municipal officials in other cities interested in preparing capital improvement programs.

The following are among the recommendations summarized in the report: That the capital improvement program should be subjected to a periodical, biannual review; that a study of the maintenance needs of the city's property should be initiated with the purpose of developing a planned maintenance program which will preserve and restore much of the city's investment; that a revolving fund should be established for the securing of sites prior to the time of actual use.

Chicago Redevelopment

A PROPOSED HOUSING PROGRAM—*Planning Staff, Michael Reese Hospital, Chicago, Ill.* 1947. 32 *pp.*

An elaborate, well-designed brochure presenting an analysis and a proposal for a housing development, based upon the best available survey data, methods of analysis, architectural planning, construction costs, and financial development. The planning project, authorized by the Board of Directors of the Michael Reese Hospital for the purpose of redeveloping the surrounding area and providing housing for hospital employes, would clear away 26 acres of slums.

The brochure is directed chiefly to the housing investor to illustrate the advantages of the proposed apartment development, as well as to Chicago organizations, both public and private, concerned with the economic, social, and physical aspects of urban planning and redevelopment.

Information about the project is also contained in a twenty-page reprint from the *Architectural Forum* magazine, available from the Hospital, 29th Street and Ellis Avenue, Chicago 16, Ill.

Municipal Airports

MUNICIPAL AIRPORT MANAGEMENT—*By Leslie A. Bryan. Institute of Aeronautics, University of Illinois, Urbana, Ill.* 1947. 26 *pp.*

Outlining in simple, non-technical language some of the problems and policies involved in municipal airport management, this bulletin should be a useful handbook for municipal officials of smaller communities who are interested in the establishment and operation of municipal airports.

Municipal Accounting

MUNICIPAL AND GOVERNMENT ACCOUNTING—*Carl H. Chatters and Irving Tenner. Prentice-Hall, Inc., 70 Fifth Ave., New York, N. Y.* 1947. 593 *pp.* $6.35.

The second edition of this book, which has been serving as a basic text in many schools, contains chapters on matters applicable to all funds including essential principles of governmental accounting, classification of accounts, budgeting, various assets (cash investments, general property taxes, and fixed assets), liabilities, cost accounting, and financial reporting. Extensive rearrangements have been made of the sections of the book in order to bring together related materials.

The book is intended to apply to state and local governments, including counties, townships, cities and villages, school districts, and special districts. It is based on the experience of the authors, who have been in contact with hundreds of officials throughout the United States and Canada, and on the study of hundreds of public reports.

Extensive appendices include a governmental accounting terminology, questions and problems based on the book's chapters, and a bibliography.

Two Land Controls

SUBDIVISION REGULATIONS AND PROTECTIVE COVENANTS: THEIR APPLICATION TO LAND DEVELOPMENT—*By Seward H. Mott and Max S. Wehrly. Technical Bulletin No. 8. Urban Land Institute, 1737 K St., NW., Washington 6, D. C.* 1947. 8*pp.* $1.00.

The purpose of this bulletin is to provide a wider knowledge of public subdivision regulations and protective covenants.

In discussing subdivision control, it is pointed out that municipalities can do a great deal in expediting platting procedures and in re-examining at intervals requirements for subdivision specifications.

As to protective covenants, the bulletin explains that they are lawful private agreements of the way land may be used with a view to "protecting and preserving the physical, social, and economic integrity of a given area." Items such as size of lots, architectural controls, building standards, location of structures, etc., are discussed in detail with sample protective covenant clauses given in each case.

On the controversial subject of racial restrictions, the bulletin states that they may or may not be a part of any good set of covenants. It is unfortunate, however, that protective covenants, in the past, have made general use of such restrictions, tending to intensify racial conflicts and multiply urban redevelopment problems.

Zoning

ZONING ORDINANCE, 1947—*Village of Scarsdale, N. Y.* 28 *pp.* 50 *cents.*

This recently revised zoning ordinance involved studies made over an eighteen-month period during which many other municipal zoning ordinances were examined and compared.

The ordinance includes, for the first time in Scarsdale, the principle of density zoning. In order to preserve the community's residential suburb status, relatively large minimum areas for the various density zones have been adopted.

French Planning Publication

L'ARCHITECTURE D'AUJOURD'HUI — *Pierre Vago, Editor. Issue on "Urbanisme," October* 1946. 5. *Rue Bartholdi, Boulogne (Seine), Paris, France.* 138 *pp.* 380 *Frs.*

Readers of THE AMERICAN CITY who understand French will find this issue of the bimonthly French architectural magazine interesting. It is devoted to discussions of various aspects of urbanism, descriptions of the reconstruction plans of a number of French cities, and various outstanding planning and rebuilding activities of countries throughout the world. The issue is handsomely printed, and extensive use is made of two-color maps and diagrams to illustrate the various planning proposals and problems.

New City Income Sources

1947 SUPPLEMENT TO "WHERE CITIES GET THEIR MONEY"—*By A. M. Hillhouse. Municipal Finance Officers Association, 1313 East 60th St., Chicago 37, Ill.* 34 *pp.* $1.50.

This *Supplement* clearly shows the marked changes which have occurred during the past two years in the revenue policies of cities from every major population group. For maximum value, the *Supplement* is designed to be used with the original study for comparison and analysis of the evolution of individual types of income for cities.

The listings of additional revenue sources for the past two years contain information about the new levies and rates for the individual cities, and, in most cases, also include the yields. Another section contains a comparison of non-property tax revenue yields, from 1944 to 1946 for 121 sample cities.

Municipal officials wondering about where they are to get additional funds for expanding services and facilities should be able to get many ideas from this practical and valuable publication.

Airport Policies

TABULATION OF STATES' AIRPORT POLICIES.—*By W. R. Macatee, Manager, Airport Division, American Road Builders' Association. A folder. Distribution free to directors of state aviation agencies and other aviation officials.*

A summary outlining practices in each state on such subjects as handling federal-aid funds, state-aid grants, tax on aviation fuel and oils, refunds made on aviation oil and gas, estimated sales of aviation gas, and estimated cost of airport development. The study is designed to help other states guide themselves in formulating their own practices.

City Revenues in Mississippi

MISSISSIPPI, MONEYS FOR THE CITIES.—*Robert Baker Highsaw. Bureau of Public Administration, University of Mississippi, University, Miss. Municipal Study Series, No. 4,* 1947. 60*pp.*

An overall picture of municipal revenues in Mississippi is presented in this study, which discusses present fiscal needs and source of income of municipalities as authorized by state laws. Various additional sources of revenues are analyzed and evaluated.

The report shows that a greater reliance is placed upon the ad valorem property tax by Mississippi municipalities than by those of any other state in the Southeast. Recommendations are made for improved administration of property and personalty taxes and for greater attention to charges for municipal services and utilities.

Colorado Planning Laws

COLORADO STATE PLANNING AND ZONING ACTS AND RELATED LEGISLATION—*School of Architecture and Planning, College of Arts and Sciences, University of Denver.* 1947. *Mimeo.* 44 *pp. Copies available at* $1.00 *from University of Denver Bookstore, 211 Fifteenth St., Denver 2, Colo.*

A useful and workable compilation of state statutes which covers the laws of city and county planning and zoning, metropolitan and regional planning, subdivision control, building codes, and slum clearance. It is the intention of the compilers to keep the document up-to-date.

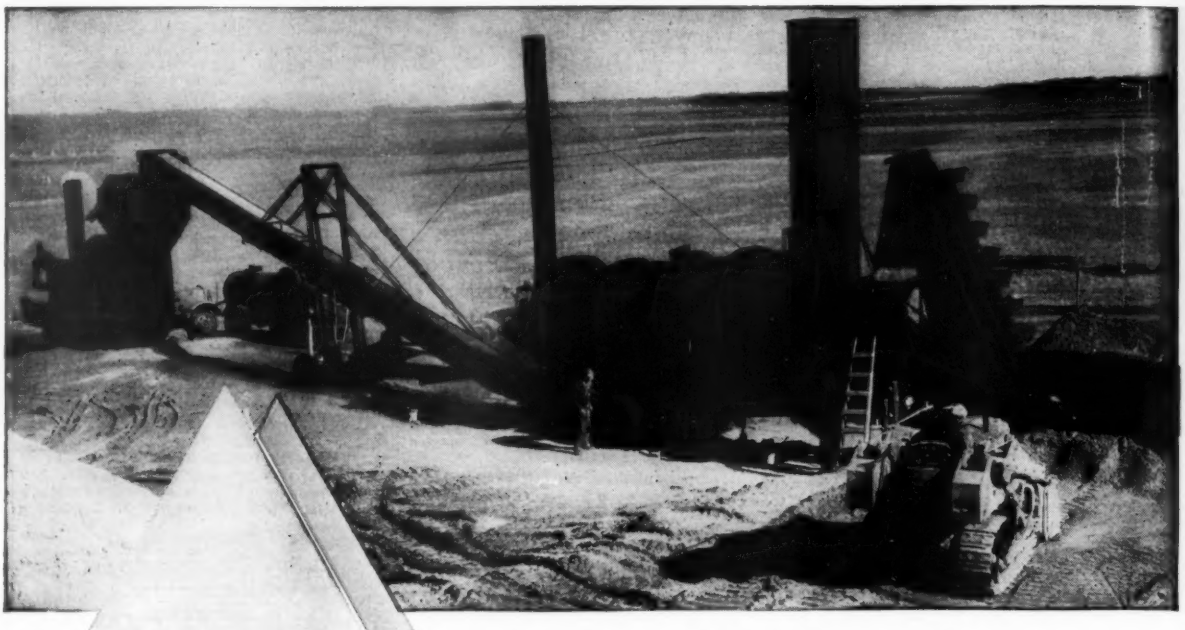
Canadian Master Plan

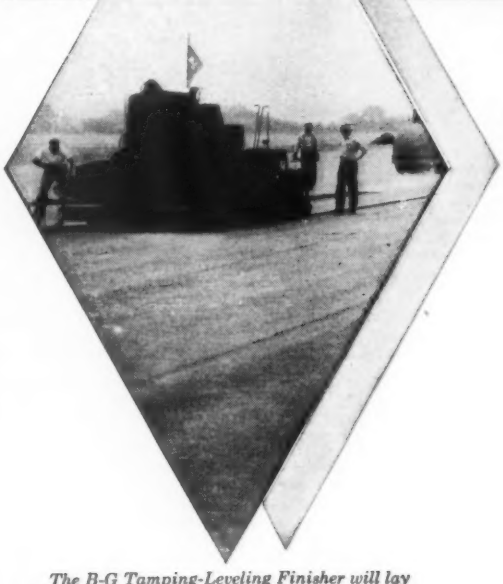
A MASTER PLAN FOR THE DEVELOPMENT OF THE CITY OF HAMILTON—*E. G. Faludi, Town Planning Consultants Limited, 24 Bloor St., East, Toronto 5, Ontario.* 1947. 85 *pp.*

The report, prepared for the City Planning Committee of Hamilton, Ontario, stresses the importance of the appointment of a Planning Board and Department to study all functions of the development and operations of the city, and to act as a co-ordinating body between the City Council and both public and private enterprise within the framework of the Master Plan.

XUM

Barber-Greene





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A Plan for Washington

WASHINGTON, A PLAN FOR CIVIC IMPROVEMENTS, 1947—*Prepared for the Commissioners of the District of Columbia by the Citizens' Planning Committee.* 1947. *Maps.* 112 *pp.*

A city-wide plan, coordinated with the metropolitan area as a whole, for providing Washington with improved municipal facilities and services and for financing them is presented in this report. That the local problems of the national capital are acute was pointed out by H. Paul Caemmerer in an article about Washington in THE AMERICAN CITY for June, pages 73-75. The Citizens' Planning Committee report now makes specific proposals for a coordinated program of improvements for the vastly increased population of the city. It declares, however, that the responsibility for the inadequate revenue base of the city rests largely with the Federal Government.

The inadequacy of the federal contribution, the small number of persons and corporations that pay taxes in Washington other than realty taxes, and the critical situation resulting from the Federal Government's continued taking of land are reported to be responsible for the city's inability to finance improvements. According to the report, the Federal Government now owns 42% of the city's entire land area less streets and alleys, yet the city cannot tax "its greatest industry," and the federal contribution to the city government has been cut down from 49% of the General Fund revenues in 1920 to 11% in 1947.

Master Plan

OUR MASTER PLAN—*Prepared by Arthur D. McVoy, Planning Consultant, Daytona Beach, Fla. Illus.*

A clear statement of the Master Plan for Daytona Beach is presented in this well-designed, attractive booklet. The citizens should be proud of the city commission and city planning boards' work.

Other municipalities can get many ideas for their own reports not only from the method of presentation used but from the improvements suggested for the city.

Louisiana Tax Exemption

LOUISIANA'S 10-YEAR TAX EXEMPTION PLAN FOR NEW INDUSTRIES—*Department of Commerce and Industry, Baton Rouge, La.* 1947. 20 *pp.*

The booklet describes the Louisiana plan, which provides for exemption of new manufacturing plants or additions to existing ones from all ad valorem property taxes, both state and local, for a ten-year period in five-year blocks. The exemption does not cover the real estate or the inventories, either raw materials or finished products.

Planning Lectures

LECTURES GIVEN AT NEW YORK STATE MUNICIPAL TRAINING INSTITUTE'S IN SERVICE TRAINING SCHOOL FOR PLANNING AND ZONING OFFICIALS —*New York State Federation of Official Planning Boards, 6 Elk Street, Albany 7, N. Y.* 1946. *Mimeo.* 56 *pp.*

Among the lectures of special interest are "Problems Created by Suburban Development and Urban Obsolescence" by Philip H. Cornick; "Subdivision and Related Land Use Problems" by J. Franklin Bonner, and "Internal Techniques of a Planning Agency" by Richard B. Williams.

Town Plan Summaries

TOWN PLAN SUMMARIES—*Ascot Gas Water Heaters Limited, 43, Park Street, London W. 1., England.*

Published for inclusion in a notebook, these town plan summaries highlight in two pages each, the main features of various British schemes for reconstruction and town planning. Among the summaries thus far published are those for the Greater London Plan, the County of London plan, Manchester, Norwich, Exeter Phoenix, and Plymouth. Additional summaries will be published from time to time. The summaries represent a useful service for British town planners and architects by a private company.

A County Land Plan

FUTURE LAND DEVELOPMENT IN BERGEN COUNTY —*County Planning Board, Hackensack, N. J.* 1947. *Maps.* 36 *pp.*

The study is directed toward an appraisal of the undeveloped land in the county as a guide for applying municipal controls such as zoning, subdivision regulations and building codes, and as a broad basis for the extension of public services such as utilities, highways, and street facilities. It is explained that the report supplements, but is no substitute for, the detailed study which each community must make for applying the controls that lead to sound development.

In its recommendations, the report shows that the county has a large surplus of suitable land for development, and advises the municipalities to act accordingly. As development among the separate communities is by its nature competitive, the report advises group action by municipalities with some measure of county zoning as the only means for achieving a reasonable density pattern.

State Planning Aid

NEW YORK STATE POSTWAR PUBLIC WORKS PLANNING COMMISSION—*Final Report, The Commission, Albany, N. Y. Leg. Doc.* 1947, *No.* 68. 144 *pp.*

Details on municipal planning-aid program carried on by the state of New York from 1943 to 1946 are contained in this report. Lists showing the status of approved state and municipal projects are also included.

By March 31, 1947, the Commission had approved 3,165 construction projects for 501 municipalities and allocated a total of $4.9 million in State funds to pay approximately half the planning costs of these projects. The estimated cost of constructing them is $294 million. Municipalities are not required to repay state grants for planning, but they must pay the remaining planning costs and costs of construction.

Texas City Officials

THE TEXAS CITY OFFICIAL—*Lynn F. Anderson and Wilfred D. Webb. Municipal Studies No. 30. The Bureau of Municipal Research, University of Texas, Austin, Texas.* 1947. 84 *pp.* $1.00.

The chief purposes of the pamphlet are to serve as an introduction to the organization and powers of Texas municipalities, giving the duties and powers of their principal officers; secondly, to provide a reference book for a considerable body of municipal law.

The powers and duties of officers in home-rule cities have not been considered, but officers in the general-law cities, towns, and villages of Texas should find this digest a handy reference source.

The American County

THE AMERICAN COUNTY—PATCHWORK OF BOARDS —*By Edward W. Weidner. National Municipal League, 299 Broadway, New York, N. Y.* 1946. 24 *pp.* 35 *cents.*

It has been customary, states the foreword of this pamphlet, to refer to the counties as "the dark continent of American politics". As a result, the pamphlet, consisting of three articles previously published in the *National Municipal Review*, shows that although government structure and functions have been vitally affected by twentieth century trends, some revision of traditional theories concerning the future of the country also may be advisable.

Surplus Airport

HOW A COMMUNITY MAY OBTAIN A SURPLUS AIRPORT—*By the War Assets Administration, Office of Real Property Disposal, Washington, D. C.* 1947. *Charts. Mimeo.* 45 *pp.*

Communities interested in obtaining a surplus airport will find a complete explanation of the procedure in this pamphlet. The type of buildings, equipment, and facilities classified as airport property, and the status of airfields, declared surplus, also will be found in the report.

Regional Planning Plea

YOUR INVESTMENT IN THE FUTURE OF METROPOLITAN GRAND RAPIDS.—*Metropolitan Grand Rapids Planning Association, Inc., 8th Floor, Association of Commerce Bldg., Grand Rapids 2, Mich.* 1947. 16 *pp.*

Stressing the importance of research, appraisal, education, and coordination, this brochure is a plea for funds for the Metropolitan Grand Rapids Planning Association to enable it to aid local planning bodies in their physical, economic, and social planning. Through the use of cartoons, the necessity for a regional or area approach to the solution of individual municipal problems is made clear.

Model Building Code

A MODEL TOWNSHIP BUILDING CODE FOR ONE- AND TWO-FAMILY DWELLINGS—*Michigan Planning Commission, 422 W. Michigan Ave., Lansing 15, Mich.* 1947. 64 *pp.*

This handy pocket-sized publication is offered as a guide to townships interested in the adoption of an ordinance or building code governing the construction of one- and two-family dwellings in their unincorporated areas. The model code may also be adapted for the use of counties, small cities, and incorporated villages, as well as being helpful to the individual who seeks satisfactory standards where no building code exists. A second model township code, for use primarily in resort areas, covering cottages, cabins, etc., is being prepared by the Michigan Planning Commission.

Michigan Municipal Salaries

SALARY AND WAGE DATA OF MICHIGAN CITIES OF MORE THAN 10,000 POPULATION, 1946-47—*Information Bulletin No. 50. Michigan Municipal League, 205 South State St., Ann Arbor, Mich.* 1947. *Mimeo.* 28 *pp.* $1.00.

The Michigan Municipal League presents in this publication tables showing the salary and wage data of the employes of 42 Michigan municipalities over 10,000 population.

Ontario Planning Procedures

THE ONTARIO PLANNING ACT AND THE MUNICIPAL ACT—*Community Planning Branch, Department of Planning and Development, Queen's Park, Toronto 5, Ontario, Canada,* 1947. 10 *pp.*

These are convenient "office consolidations" which outline clearly municipal planning procedures and the authority under which municipalities may regulate land.

Other Reports Received

ATHOL, MASS.—Forty-first Annual Report of the Water Commissioners. 1946. Tables. 18 pp.

ATLANTA, GA.—Annual Report of City Comptroller. 1946. B. Graham West, Comptroller. Tables. 80 pp.

KANSAS CITY, KANS.—The 1946 Annual Report of the Board of Public Utilities. Charts. Illus. 32 pp.

NEW ORLEANS, LA.—A Report to the Commission Council. One Year in Office. By Mayor deLesseps S. Morrison. Mimeo. 46 pp.

SALT LAKE CITY, UTAH.—Auditor's Annual Financial Report of Salt Lake City Corp. 1946. Louis E. Holley, City Auditor. Charts. 78 pp.

SEATTLE, WASH.—Annual Report of the Department of Lighting. 1946. E. R. Hoffman, Superintendent. Charts. Illus. 24 pp.

WASHINGTON, D. C.—City Debt in 1945. Prepared under the supervision of Allen D. Manvel, Chief, Government Division, Bureau of Census. Mimeo. Charts. 59 pp.

WINNIPEG, CANADA.—Preliminary Report on Transit. 1946. Prepared jointly by Metropolitan Planning Committee and Winnipeg Town Planning Commission. Charts. Maps. 40 pp.

WINNETKA, ILL.—Finance Department's Annual Report for Fiscal Year ending March 31, 1947. Mimeo. Tables. 25 pp.

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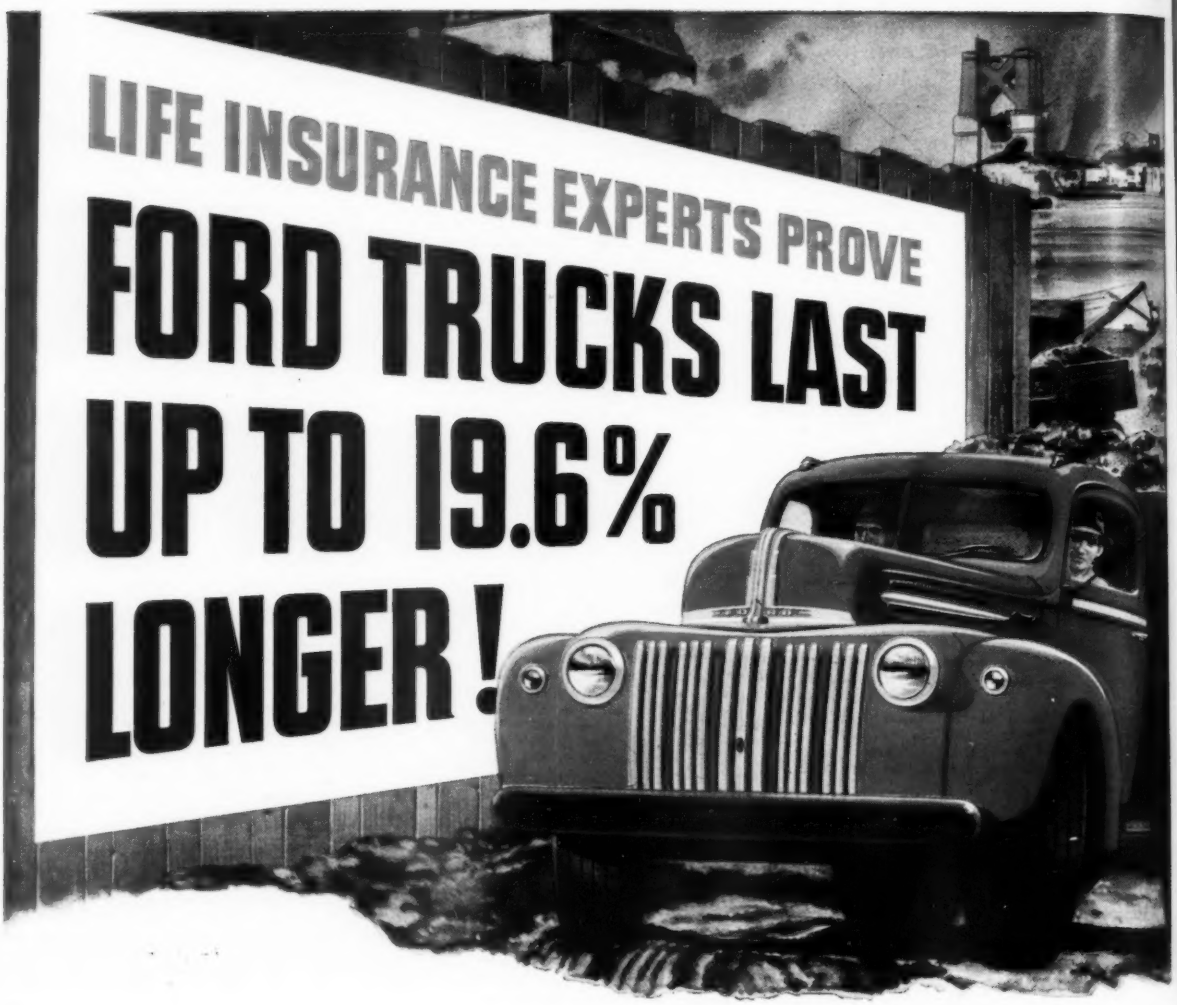

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Based on the application of sound and accepted actuarial methods to the actual experience as measured by truck registrations, we hereby certify that, in our opinion, the accompanying table fairly presents the relative life-expectancy of the trucks involved.

WOLFE, CORCORAN AND LINDER
Life Insurance Actuaries, New York, N.Y.

Three Pilot Studies

TOWN PLAN PILOT STUDIES FOR HARRISON, N. Y., AND CHESHIRE AND FAIRFIELD, CONN.—*Technical Planning Associates, Inc., 30 Whitney Ave., New Haven 10, Conn.*

The three pilot studies listed above are all for small, relatively undeveloped communities, which would benefit at their present stage of growth by comprehensive planning of resources and facilities.

The studies have been printed in attractive form and, because of their simplicity of presentation, should aid in stimulating citizen-awareness of the importance of planning. It is also emphasized in each report that permanent planning procedures are required and that comprehensive master plans should be developed in each of the communities.

Taxing Corporations

HOW SHOULD CORPORATIONS BE TAXED?—*Tax Institute Symposium. Tax Institute, Inc., 150 Nassau St., New York 7, N. Y. 1947. 251 pp. $4.00.*

Focussing attention on the highly unsettled state of corporation taxation, this volume consists of discussions by tax economists, corporation executives, public officials, and tax practitioners on specific aspects of the problem.

The book points out that, while the people of the country have reached a substantial agreement that the individual income tax must constitute a major element in the national tax system, no such accord has been reached with regard to the corporation income tax. Controversial questions, such as "Does the Present Tax System Discourage Business Enterprise?" and "Should the Taxing Power be Employed to Regulate the Economy?" are included among the six parts of the book.

The Cleveland Market

CLEVELAND MARKET DATA HANDBOOK, 1947—*Howard Whipple Green, Real Property Inventory of Metropolitan Cleveland, 1001 Huron Rd., Cleveland 15, Ohio. 1947. 77 pp. $2.50.*

A methodical compilation of local and national statistics and facts which will affect Cleveland's economic trends, and which reveal that region's status as compared with other areas of the country.

Two City Plans

TWO CITIES: PLANNING IN NORTH AND SOUTH AMERICA—*Museum of Modern Art Bulletin. Vol. XIV, No. 3, June 1947. Museum of Modern Art, 11 West 53rd St., New York 19, N. Y. 19 pp. 15 cents per copy.*

Supplementing the exhibition on display at the Museum, this bulletin describes in further detail some of the planning aspects of Cidade dos Motores, the new city planned for Brazil, and the Michael Reese Hospital planning project in Chicago.

Intergovernmental Building Survey

A SURVEY OF GOVERNMENT BUILDINGS IN SAN JOSE—*Santa Clara County Council on Intergovernmental Relations, 28 South First St., San Jose, Calif. 1947. Mimeo. 33 pp.*

As a result of this report, definite improvements have been made in the field of intergovernmental relations. It points out the inadequacy of all existing buildings, the many disadvantages of having government agencies scattered over a large area of the city, and the desirability of selecting a single site which could provide for present space requirements as well as estimated needs for future expansion during at least a thirty- to sixty-year period.

The report emphasizes that all buildings should be planned in such a way that related government functions would be in close proximity to one another providing a greater convenience to the public and encouraging better intergovernmental relations. Since the issuance of the study, the city and county governing bodies and staffs have held joint meetings for the purpose of working out a "government center" project on a cooperative basis.

Los Angeles Government

LOS ANGELES COUNTY AS AN AGENCY OF MUNICIPAL GOVERNMENT.—*George W. Bemis and Nancy Basche, The Haynes Foundation, 2324 South Figueroa St., Los Angeles 7, Calif. 1947. 105 pp. $2.50.*

The administration of municipal-type services by Los Angeles County is described and analyzed in this study, one of a series of research projects inaugurated two years ago under the direction of Charles W. Eliot, well-known city planner, in the attempt to determine economic trends, social meaning, governmental organization, and physical structure of the region.

Suggestions are made in the report for changes in organization and procedures which would assure more equal distribution of services, equalize tax rates, and increase citizen participation in the determination of the character and extent of services given. Another objective of the study is to try to discover a practicable method of reducing the number of overlapping special districts in the densely populated unincorporated areas. In general, the recommendations are directed toward creating an integrated structure of government in the metropolitan area rather than one which is completely unified.

D. C. Parking Program

A PARKING PROGRAM FOR WASHINGTON — *By Charles T. McGavin. Prepared for Board of Commissioners. District of Columbia. 1947. 37 pp.*

Downtown parking problems in Washington, D. C., can be solved in three phases, according to this report. These are as follows: A system of express buses operated over express streets, to provide mass transportation for the all-day worker and for many shoppers; a system of fringe parking lots surrounding the downtown business district where people could leave their cars and ride into the congested area on shuttle-buses operated from the lots, and provision of enough off-street parking garages in the downtown district to take care of the short-time parkers and business personnel.

The report, printed in a 16-by-12½-inch format, criticizes federal government policies for having failed to provide adequate parking facilities when federal office buildings were constructed. It also includes a brief survey of the parking programs of other cities.

Public Finance

PUBLIC FINANCE—*Harley Leist Lutz, Fourth edition. D. Appleton-Century Company, 35 West 32nd St., New York 1, N. Y. 1947. 730 pp. $5.00.*

Some readers may question the basic philosophy and point of view expressed by the author and his fear of "alien fiscal doctrines," but few will deny the value of the book's comprehensive approach and scholarly preparation.

The author believes that fiscal powers should not be used to influence, control, or direct economies, and he deplores the people's desire for security, which is, he believes, a sure step toward the bogey of "statism."

In spite of these beliefs, the discussions by the author of various aspects of public expenditures, revenues, taxation, and credit and debt policies are in many respects illuminating, and contain much information of value to those concerned with municipal financial administration.

Payments for Slum Land

SLUM LAND ACQUISITION, THE PATTERN OF PAYMENTS FOR LAND ACQUIRED FOR PRE-WAR PUBLIC HOUSING SITES—*National Housing Agency, Washington, D. C. 1947. Tables. 14 pp.*

The study, based on records of the United States Housing Authority, attempts to serve as a guide toward answering the question whether the purchase of slum properties by public agencies for housing and redevelopment purposes does not excessively benefit or "bail out" financial institutions, absentee owners, or mortgage holders. No definite conclusions are given, but it is shown that out of more than 10,000 transactions analyzed, involving payments of some $41,000,000, almost half of the amount went to individual equity holders. Fifty-two percent went to other equity holders, to mortgage holders, and to tax collectors and other classes of claimants.

Regional Airport Plan

AIRPORTS OF TOMORROW—*Regional Plan Association, Inc., 205 E. 42nd St., New York 17, N. Y. 1947. Appendices. 68 pp. $3.00 to non-members.*

Attractively prepared and printed, this bound report, which includes the contents of two bulletins published earlier, recommends for the New Jersey-New York-Connecticut Metropolitan Area "an integrated system of 129 airports, some of which are already in operation, to meet the needs of the Region's growing air commerce."

The report was approved in December 1946 by the Administrator of the Civil Aeronautics Administration as a basis for the foundation of the New York metropolitan area phase of the National Airport Plan. The foreword declares that individual communities in the region would make a great mistake if they were to approach air transportation on the basis of local rivalry.

Included in the report is the recommended plan for the development of four major airports, eight supplementary airports, eighteen secondary airports, and ninety-nine local airports; a section devoted to seaplane bases; a brief review of aeronautics legislation, and a twenty-page appendix of supporting maps and data.

Effects of Public Housing on Families

SOCIAL ASPECTS OF PUBLIC HOUSING—*By Sanford Winston, North Carolina Council of Housing Authorities, Raleigh, N. C. 1947. 44 pp.*

Primarily an evaluation of North Carolina experience, this study is based largely on interviews with 194 white and 112 Negro families in public housing projects in Charlotte, High Point, Kinston, New Bern, Raleigh, and Wilmington. The families were studied in three stages—as they lived before they entered the housing projects, while they were in the projects, and finally after they had left the projects and settled elsewhere.

The study shows clearly that living in the projects greatly stimulated the desire of the individual families for better housing accommodations. As the economic status of many of these families had improved while they were project residents, a high percentage succeeded in bettering their living standards after moving out of the projects. The author raises the question whether there should be a time limit for remaining in a project, to enable a greater number of low-income families and their children to enjoy the advantages of public housing. The point is also made that housing authorities and executives should assist families about to move out of public housing projects in securing better quarters.

State Parks

PARK AND RECREATION PROGRESS, 25TH ANNIVERSARY YEARBOOK—*National Conference on State Parks, 901 Union Trust Building, Washington, D. C. 1947. 122 pp. Appendix. $2.00.*

This is a compilation of historical material of the quarter century of progress in the state park field. Separate accounts are given of park developments in each state. A comprehensive appendix, compiled by the National Park Service, shows the acreage and accommodations for each state park now in existence.

Tax Facts

TOTAL TAX COLLECTIONS IN 1946; STATE TAX ACTIVITY, and STATE TAX STUDY COMMISSIONS —*Three Tax Policy issues, Tax Institute Inc., 150 Nassau St., New York 7, N. Y. 1947. Single copies, 25 cents.*

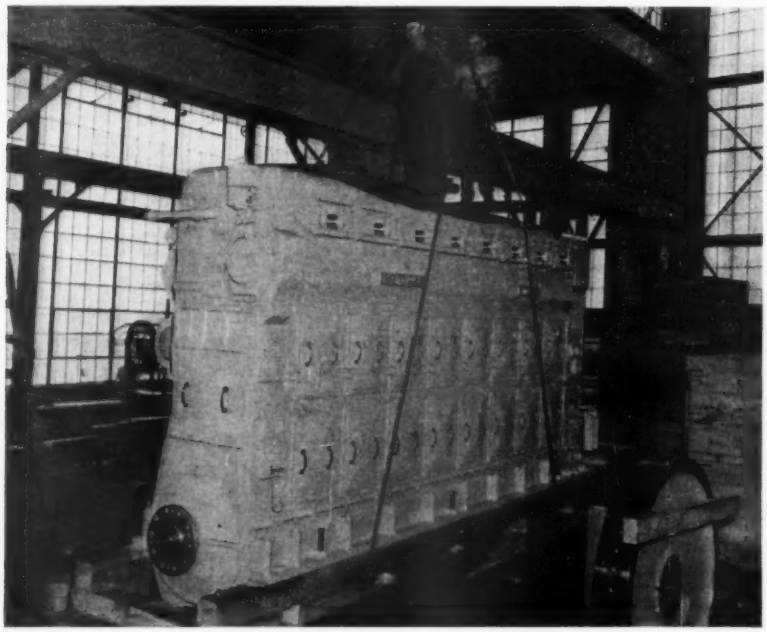
These pamphlets include useful statistical summaries, tables, and other data regarding current trends in various tax fields. Their concise form makes it a simple matter to absorb the information presented.

XUM

News and Illustrations

Items of interest to city, town and county officials and others concerned with the economical construction and efficient operation of public improvement undertakings

Superior Diesels for Havana



One of the three large diesel engines to be installed by Senor Antonio Gil, Havana contractor, for Havana's sewage disposal system.

Three large diesel engines manufactured by the Superior Engine Div., National Supply Co., Pittsburgh, Pa., have begun their journey to Havana, Cuba. They will be installed at the Casa Blanca Pumping Station in the Cuban capital's sewage disposal system.

Two of the engines are 8-cylinder Model 80 generator sets, with 960 rated hp at 360 rpm; the third, a 6-cylinder Model 80, has a 720 rated hp at 360 rpm.

Greenhouses Cut Sludge-Drying Area

Almost universally accepted in sanitary engineering design standards is the principle that sludge-drying-bed areas for sewage treatment plants can be cut by half if the beds are covered with glass greenhouses. Also recognized is the fact that if a sewage treatment plant is located close to a residential area, its use of a greenhouse-covered sludge bed gives it an attractive appearance that these near neighbors appreciate.

Lord and Burnham, Div. of Burnham Corp., of Des Plaines, Ill., Irvington, N. Y., and St. Catherines, Ont., has issued a set of five engineering data folders covering glass enclosed sludge beds, 139-B, 138-B, 148-B, 159-B, and 180-B. The sheets will be furnished upon request, and may be obtained by writing to the company.

Gerlitz Appointed Simplex Sales Manager

Everett M. Jones, Vice-President of Simplex Valve and Meter Co., Philadelphia, Pa., announces the appointment of Frank E. Gerlitz, Jr., as Sales Manager. Mr. Gerlitz first came to the company in 1941, serving in the capacity of sales consulting engineer. In 1946 he was made Assistant Sales Manager.

Prior to his connection with the company, he obtained wide experience as designing engineer in municipal water and sewage treatment plants, and further added to his experience in that field by his association for several years with the Pennsylvania State Board of Health.

Alcoa Appoints Vice-presidents

The Aluminum Company of America, 801 Gulf Bldg., Pittsburgh 19, Pa., has appointed Ralph V. Davies, Robert B. McKee, and Donovan Wilmot Vice-presidents of the company. Previously they had held the positions of assistant general sales managers. Mr. Davies will also become General Sales Manager, succeeding George J. Stanley, who has retired.

Oren Fire Apparatus Merges with Roanoke Welding

The original Roanoke Welding and Equipment Co. and the Oren Fire Apparatus Co. are being merged into the new Oren Roanoke Corp., the facilities and personnel of each being pooled for what is hoped will be a most effective organization with a production capacity better able to handle the great demand for Oren Fire Apparatus.

In response to many requests from its customers in both municipal and rural fire service, Oren now offers, in addition to its popular line of 500 and 600 G. P. M. and Booster Apparatus, a complete line of triple and quadruple combinations with pump capacities up to 1,500 gpm, built on newly designed lightweight chassis with powerful high-output engines. Choice of power available are 240, 225, 190, 150, and 130 bhp.

Features of the new Orens include: fully closed pump compartments, larger booster tanks, extra-wide cabs and hose bodies, divided hose loads, compartment-type bodies. Both municipal and rural types can be built to fit exactly the requirements of the purchasing department. Details may be had by writing Oren Roanoke Corp., 1201-09 West Salem Ave., Roanoke 16, Va.

Oren 750-gpm Triple Combination with compartment-type body and 400-gallon booster tank, recently delivered to Uhrichsville, Ohio.

Heading Up Chicago Transit

Walter J. McCarter, formerly General Manager of the Cleveland Transit System, will be the operating executive of Chicago Transit Authority when it acquires the Chicago Surface Lines and the Chicago Rapid Transit Company.

The Authority is scheduled to take over the two properties September 1, contingent upon the sale of $100,000,000 of its revenue bonds to finance the purchase, bids taken August 5.

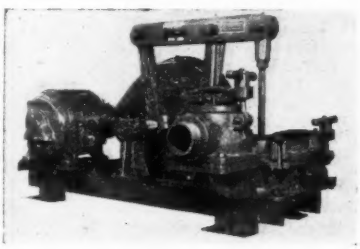
Guy A. Richardson, formerly the chief operating executive of the Chicago Surface Lines, and Bernard J. Fallon, Trustee and Executive Officer of the Chicago Rapid Transit Company, have been appointed consultants. The Board fixed Mr. McCarter's salary at $32,500 a year, and the salaries of the two consultants at $15,000 each per year.

Steinman Appointed by N. Y. State Bridge Authority

The New York State Bridge Authority has appointed David Barnard Steinman, New York designer, as Consulting Engineer for the proposed Kingston-Rhinecliff Bridge across the Hudson River. Mr. Steinman was authorized to proceed with the preliminary surveys and designs for the bridge.

Two Important Pumps For Sewerage Service

Two problems that sewage-works officials must face are the pumping of sludge and the emptying of tanks, manholes, grit chambers, and other miscellaneous duties where trash, sand, and grit must be moved. Marlow Pumps,



manufacturer, of Ridgewood, N. J., in a recent bulletin points out several factors that make the Marlow pumps particularly well fitted to do these jobs.

The company's engineers point to these features to emphasize the advantages of the sludge pumps:

Oversize eccentric bearings using marine grade babbit that gives longer wearing life.

Shear pins designed to prevent jamming. Hardened bushings shear the pins cleanly and positively without damage to pump parts.

Permanence of piston alignment assured by the use of extra strong eccentric rod made entirely in one piece.

Large passageways assure higher flow efficiencies and prevent clogging.

Heavily welded steel-frame foundations, built with a drip gutter, guaranteed against breakage for the life of the pump.

Eleven variations of stroke from 5¼ inches to zero, readily changed to meet any required capacity.

Ample packing consisting of five rings ¾-inch square.

Pump body and stuffing box are separate castings, thus facilitating disassembly if required.

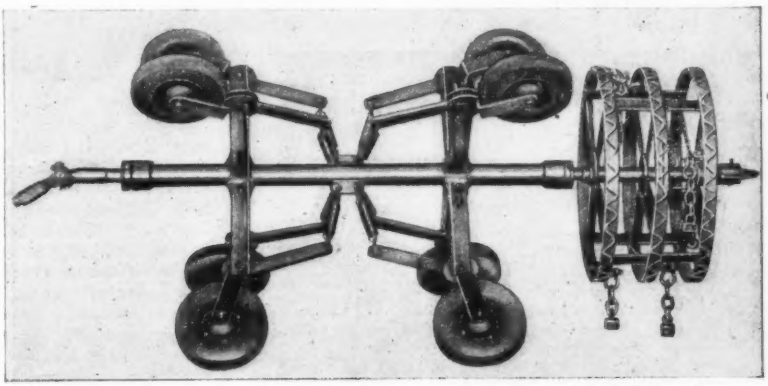
Ball valve guided by beveled ribs in a patented valve chamber, thus preventing clogging.

Valve seats that are readily removable.

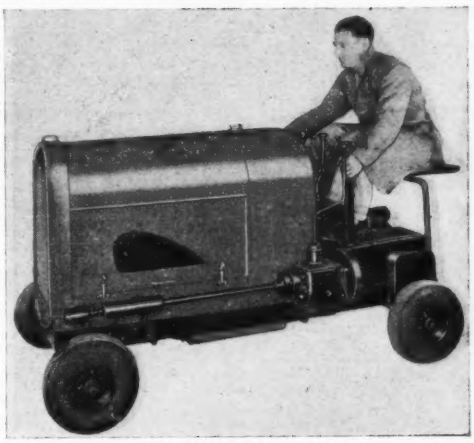
The Marlow "Mud Hog" Diaphragm Pumps are available as portable or stationary units, and they have many of the features characteristic of Marlow sludge pumps. They have the same patented non-clogging ball-valve chambers, the same rugged construction, the same ability to do heavy pumping jobs. They have a reputation for being able to take abuse, and to give long, continued service. The first "Mud Hog" ever made has been used at a sewage plant steadily since 1924. They are made in 3- and 4-inch single and 4-inch double sizes with capacities of 3,000 to 9,000 gallons per hour and can be powered either by electricity or gasoline.

Sludge pump features are described in Marlow Pumps Bulletin S46; "Mud Hogs," in Bulletin M46.

"FLEXIBLE" HAS THE TOOLS



AND THE EXPERIENCE



"FLEXIBLE HAS THE TOOLS"—This was the comment of hundreds of delegates at the American Water Works Association Convention in San Francisco. This also has been the steady comment of hundreds of satisfied Flexible customers. The right tools plus the proper background of experience add up to fast, low-cost pipe cleaning operations. And clean pipes mean savings in many ways—higher operating efficiency—less maintenance expense—added protection to capital investments.

Flexible has the tools—and the experience—and the combined output of two large, modern manufacturing plants—as well as a unique inventive ability which has solved many a tough line cleaning problem.

Check Flexible on your pipe cleaning needs. Do it today. It's well worth it. Address Dept. AC-8.

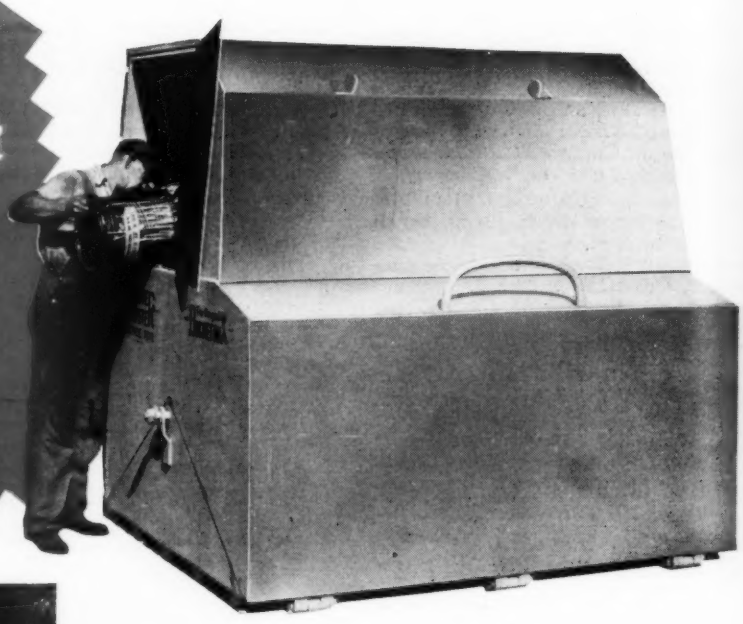
FLEXIBLE UNDERGROUND PIPE CLEANING CO.

9059 Venice Blvd., Los Angeles, California

855 Board of Trade Bldg. Chicago 4, Ill.
401 Broadway New York 13
147 Hillside Ter. Irvington, N. J.
P. O. Box 165 Atlanta
1624 Harmon Place Minneapolis 3, Minn.
29 Cordan Ave. Roslindale 31, Mass.
P. O. Box 694 Pittsburgh
P. O. Box 447 Lancaster, Texas
41 Greenway St. Hamden, Conn.

XUM

Here's a more efficient system of TRASH and RUBBISH DISPOSAL



If your town has the problem of unsightly, unsanitary, litter-filled alleys it will certainly pay you to investigate the Dempster-Dumpster System. This remarkable system has helped dozens of towns have sanitary, efficient rubbish disposal, and at an amazingly low cost. Here's how it works. Detachable truck bodies, built in the form of rubbish depositories, are placed at needed points in the business district, factory areas, schools and housing centers. Once the rubbish is placed in the despository, no rats or flies can contaminate it . . . no domestic animal can scatter it . . . it is completely out of the reach of small children. As bodies are filled, a truck hoisting unit makes scheduled collection rounds, picking up each loaded body, in turn, hauls it . . . dumps it and returns the empty to its original position. It's as quick and simple as that . . . only one man, the driver handles the entire collection operation with the hydraulic hoist.

Savings in payroll and operational expenses are obvious when you consider that one truck hoisting unit with several bodies does the work of 4 or 5 ordinary trucks.

We manufacture bodies in various capacities and models to meet every requirement of rubbish collection. Why not write today for complete information on how the Dempster-Dumpster System can help your town toward a more efficient rubbish disposal system.

Top: 8 Cu. Yd. pyramid type body. Note convenient height and placement of doors. Above left: Hoisting unit, with 10 cu. yd. body in carrying position. Bottom: Body in dumping position . . . load is dumped automatically.

DEMPSTER DUMPSTER
TRADE MARK REG.

DEMPSTER BROTHERS, Inc., 387 Springdale, Knoxville 17, Tenn.

New Tractor-Shovel

The HD-5 of the Alameda County Street Department at work preparing streets for a new Oakland, Calif., subdivision.

Allis-Chalmers' latest tractor model, the HD-5, is making its first appearance in many parts of the country. This comparatively small 37.5-hp diesel crawler is equipped with the Tracto-Shovel. It is manufactured by the Allis-Chalmers Mfg. Co., Tractor Div., Milwaukee, Wis. For literature, write Allis-Chalmers.

Corrosion-Resistant Coatings For Metal, Wood, Concrete

It has long been accepted that painting water tanks, bells, furnace jackets, and other types of mechanisms susceptible to corrosion or other chemical changes is not merely decorative but a necessity.

On water tanks, Roskote aluminum paint reduces corrosion, cuts maintenance costs, helps protect contents against loss by evaporation or chemical change because of high reflections. When used on structures that are housed in high-humidity enclosures, a coating of aluminum paint protects the surface against moisture. Aluminum paints resist sulfur-containing gases frequently encountered in chemical plants, preventing the surfaces from corrosion and discoloration. A coating on hot-air ducts, boilers, and pipes reduces heat loss by radiation.

Roskote aluminum paint is manufactured by Royston Laboratories, Inc., Blawnox, Pa.

Crawler-Tractors To Aid Flood Victims

Nine TD-9 crawler tractors are being prepared for shipment to the flooded areas of the Middle West by the International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.

Upon completion of the crawler units, Harvester will ship the tractors to the R. C. Larkin Co. for bulldozer and shovel attachments. Three of the tractors will be equipped with Hough bulldozer shovel attachments, two with Isaacson hydraulic bulldozers, and four with Bucyrus-Erie bulldozers. The six bulldozer units will also be equipped with LeTourneau cable carry-all scrapers.

SPARLING

Main-Line Meters

2-Inch and up

Consistent Accuracy
Ease of Installation
and Maintenance
Low Pressure Loss

Quotations and Bulletin 309 come at your request.

The SPARLING Manufacturers of WATER MEASURING EQUIPMENT

Los Angeles 54..Box 3277 Terminal Annex
Chicago 16....3104 South Michigan Ave.
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CEMENT GUN COMPANY

"GUNITE" CONTRACTORS

GENERAL OFFICES—ALLENTOWN, PENNA., U.S.A.

This pipe after BEING QUICKLY LOADED
LOAD of 33,800 lbs WITHOUT
CRACKING or DEFLECTING
another pipe not gunited
CRACKED and COLLAPSED
with Load of 17,300 lbs.

"GUNITE" SAVES SEWER IN CANADA

The pictures tell the story. A 6-months-old concrete pipe sewer line at Owen Sound, Ontario was found to be failing under earth load. The tests shown above were made, and convinced the city officials that a reinforced "GUNITE" lining would correct the trouble, and we did the job in 1934. The sewer was 36" and 48" diameters and one-half mile long.

"GUNITE" is ideal for lining and strengthening old brick or concrete sewers and has been widely used for this purpose.

Our 72-page bulletin D2300 describes scores of profitable uses of "GUNITE." Write for your free copy.

XUM

FEEDS—METERS—MIXES
CHLORINE GAS ACCURATELY

PURIFICATION FOR WATER, SEWAGE AND SWIMMING POOLS—Everson SterElators operate manually or semi-automatically, also automatically proportion gas flow to water flow.

Everson SterElators Utilize a 24" water gauge vacuum and visible flow meters, with wide ratio ranges of capacities: 10 to 1, 50 to 1, 110 to 1.

All SterElators are dependable, accurate, safe and easy to operate. Guaranteed to give complete satisfaction.

SterElators by Everson

SEE EVERSON FOR THE LAST WORD IN
SWIMMING POOL EQUIPMENT
203 W. HURON ST. CHICAGO, ILL., U. S. A.

WORTHINGTON-GAMON

LIQUID METERS
All Sizes All Types

Worthington-Gamon Meter Co.
Subsidiary
WORTHINGTON PUMP & MACHINERY CORP.
296 South Street Newark 5, New Jersey

TRAINED ENGINEERING SERVICES
WANTED At
War Department Installations Overseas

There is an immediate need for trained engineering services at War Department installations overseas. The operations requiring technical services include water and sewage, electrical refrigeration and air conditioning, heating utilities, as well as roads, grounds, highway and building maintenance.

Applications should be made to Civilian Personnel Branch Office of the Chief of Engineers, Building T-7, Gravelly Point, Virginia. Applications should include completed Form 57, U. S. Civil Service Commission, in duplicate, copies of which can be obtained at your local post office.

Changed Your Address?

If so, and your copies of THE AMERICAN CITY are not reaching you, please mail this form to us at 470 4th Avenue, New York 16, N. Y. so that your stencil may be corrected.

Changed from .....

..... (former address)

Changed to .....

.....

..... (new address)

Name ..... (please print)

Position .....

Pennsalt Names Duffy Special Chemicals Manager

Joseph J. Duffy, Jr., has been appointed Manager of Sales of the Special Chemicals Division of the Pennsylvania Salt Mfg. Co.

Joseph J. Duffy, Jr.

Formerly assistant Manager of Sales of the division, Mr. Duffy has previously served with the New York office as Sales - Service Engineer.

Mr. Duffy is replacing William P. Drake, recently appointed Assistant Vice-president of the company.

Biggest Bowl Refractor

A new Holophane prismatic globe, the largest bowl refractor ever produced, has been announced by the Lighting Division of the General Electric Company. It is reported that this globe will place as much as 43% more light on the street than any reflector-type luminaire now available. The prismatic globe will accommodate 10,000- or 15,000-lumen filament lamps, or a 16,000-lumen mercury lamp. Light from the fixture emanates in two principal beams up and down the street in sufficient width to insure uniform distritribution. They are manufactured by Holyphane Co., Inc., 342 Madison Ave., New York 17, N. Y.

Monohearth Ordered By Troy and Jacksonville

The Nichols Engineering & Research Corp., 60 Wall Tower, New York 5, N. Y., has contracted to build a 250-ton Nichols Monohearth mechanically stoked incinerator for Troy, N. Y., and a 350-ton plant for Jacksonville, Fla.

Jahn Opens New Offices

The C. R. Jahn Co., Chicago, Ill., manufacturer of heavy-duty, low-bed trailers, has opened new sales and executive offices at 1106 West 35th St., Chicago. Factory and accounting offices will remain in Savanna, Ill.

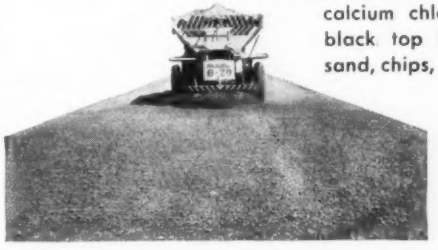
SAVES TIME
SAVES MATERIAL
SAVES LABOR
SAVES LIVES

WINTER OR SUMMER—THE NEW HIGHWAY MODEL B-29 IS ALWAYS ON THE JOB

The Model B-29 is designed for around the year usefulness giving highest efficiency and low operating costs. As an ice control unit it speeds to danger spots and spreads sand or cinders without wasting time or material. Spreading may be started or stopped while truck is traveling at any speed. Twin distributor discs provide uniform spread, casting to left, right or both sides as desired. Material is cast low to ground and ahead of rear wheels of truck permitting safety at operating speeds, and eliminating interference with traffic. The full width of a 2 or 4 lane highway can be covered in one operation. One man operates the truck and controls the spreader from cab.

NEVER OUT OF SEASON

The answer to the need for an all-year machine, the Model B-29 can be used for applying a seal coat on highways and streets, for dust control with calcium chloride, to stop bleeding on black top in hot weather, for hauling sand, chips, crushed rock, etc., for road construction and maintenance. Illustration shows the Model B-29 spreading road rock on secondary highway.



Write for Literature

SOLD AND SERVICED BY LEADING CONSTRUCTION MACHINERY DEALERS THROUGHOUT THE UNITED STATES, CANADA, AND FOREIGN COUNTRIES

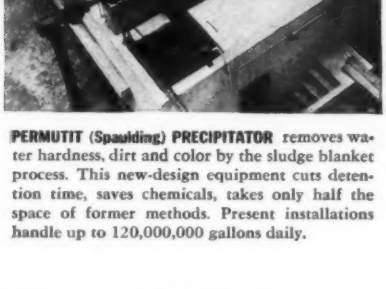
HIGHWAY EQUIPMENT COMPANY, INC.

629 D AVENUE N. W., CEDAR RAPIDS, IOWA

MANUFACTURERS OF THE WORLD'S MOST COMPLETE LINE OF SPREADERS

XUM

. . . there could be such a *difference* in water!"



PERMUTIT (Spaulding) PRECIPITATOR removes water hardness, dirt and color by the sludge blanket process. This new-design equipment cuts detention time, saves chemicals, takes only half the space of former methods. Present installations handle up to 120,000,000 gallons daily.

SOFT WATER MAKES THAT DIFFERENCE!

SOFT WATER lightens the housewife's work . . . eases washing and cleaning. The home comforts of Permutit softened water mean more leisure, greater happiness and better living for all!

SOFT WATER attracts new capital, new industries since it's a "must" for many manufacturing techniques. Industrialists today are scouting for plant sites in soft water communities!

PERMUTIT* Water Conditioning Equipment is your city's *economical* way to a *prosperous* future!

Find out how Permutit* can serve your community. Full particulars will gladly be furnished to you and your consultants. Write to The Permutit Company, Dept. AC-8, 330 West 42nd Street, New York 18, N. Y., or to Permutit Co. of Canada, Ltd., Montreal.

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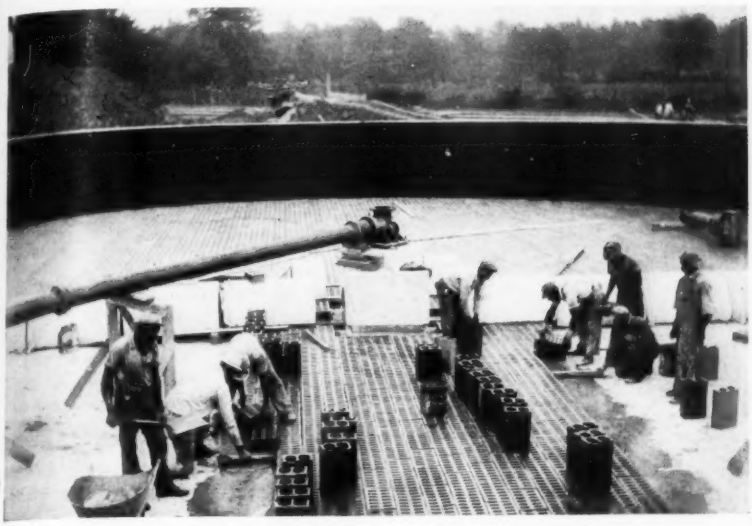
FOR 34 YEARS WATER CONDITIONING HEADQUARTERS

for 34 years **Permutit**

Underdrain Blocks Increase Flow and Ventilation Areas



Laying Accelo Hi-Cap Underdrain Blocks on the concrete floor of a filter on a layer of grout.

The Accelo Hi-Cap Filter Underdrain Blocks, designed for prompt removal of sewage as it percolates through the filter and for providing an adequate flow of air into and from the filter, may be used in all types of high-rate or high-capacity biological filters.

Providing the increased flow and ventilation areas so urgently needed for the successful operation of high-rate sewage filters, these vitrified, salt-glazed fire-clay blocks are manufactured for Infilco, Inc., 325 West 24th Place, Chicago 16, Ill., by Ayer-McCarel-Reagan Clay Co., Brazil, Ind., as its Armcre Type AA. The blocks may be laid directly on the concrete floor of the filter, or on a thin layer of grout. The blocks, covering the entire floor of the filter, form continuous underdrain channels having the same slope toward the collection channel as the floor on which they are laid, providing a continuous support for the filter media over the entire floor area. The blocks may be used advantageously in any trickling-filter installation.

Each block has two ducts running lengthwise, 4 inches wide and 6 inches high, with a curved bottom. In addition to fourteen top apertures, each 3 inches by 1 inch, each block has nine side openings of the same size that provide lateral ventilation.

Literature diagramming suggested methods of laying the blocks and containing specifications are obtainable from the company.

A Light-Duty Snow Plow

The Maxim Single Blade Snow Plow has been designed for auxiliary snow-plowing work in areas where the heavy plows might find difficulty in maneuvering or when heavy plows have their mouldboards full trying to keep the main thoroughfares clean.

The plow is intended for use in drives, parking areas, and walks. It will fit either passenger cars or trucks by clamping on the bumper. No special attachments or underframe mounting is needed.

The plow has two special features. One is its use of two big hoops, enabling the plow to clear obstacles easily. As the cutting edge of the plow hits an obstacle sticking up through the ground, the plow tips forward and rolls up on the hoops until the cutting edge is raised sufficiently to clear the obstruction. This feature allows it to clear obstacles about 4 inches high.

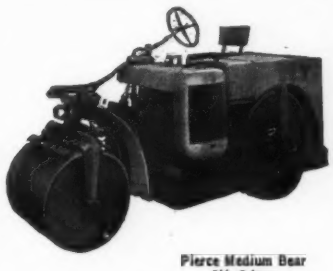
In addition, the blade automatically lifts off the ground when the car or truck backs up. This allows snow behind the plow to clear beneath the blade.

The plow can be adjusted for either straight or angle plowing. It is manufactured by the Maxim Silencer Co., 85 Homestead Ave., Hartford 1, Conn., and sells for $165 net.

A Roller For Every Job

Sturdy, heavy-duty rollers, engineered to stand up under the toughest conditions. Pierce-Bear Tandem Rollers are powered by economical Allis-Chalmers 4-cylinder industrial type gasoline engines. Variable weights, from 3½ to 5 tons with built-in water tanks for ballast and wet rolling.

Pierce Baby Bear
2½-3 tons

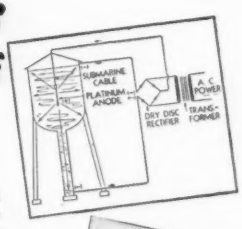


Pierce Medium Bear
3½-5 tons

The new 2½-3-ton Pierce Baby Bear is designed for close-in work and small area maintenance. It works against a curb up to 25 inches high and within 1½ inches of a higher wall or building. Final drive is within the rear roll. Use Pierce-Bear Tandem Rollers for all-around performance. Write for folder.

Pierce-Bear Rollers
Lewis Manufactuing Co.
415 Hoefgen Ave.—San Antonio 6, Tex.

RUSTA RESTOR *REDUCES TANK MAINTENANCE*



Modern, Proved Cathodic Method Provides Lasting Protection Against Rusting—Eliminates Both the Loss of Service, and Cost, of Interior Painting.

Your tanks can get lasting protection against rusting with Rusta Restor. Approved and endorsed by national and state authorities, Rusta Restor reverses the electro-chemical process that causes rusting,—keeps the tank in a "neutralized" state that prevents rusting. Inexpensive to install, and cheap to operate. Send for full details today.

RUSTA RESTOR
A DIVISION OF
THE JOHNSTON & JENNINGS COMPANY
861 ADDISON ROAD • • • CLEVELAND 14, OHIO

SERVICE . . .

. . . with a *wrench!*

Easy servicing is another one of the reasons why you'll go big for LUDLOW Hydrants! One man with a wrench can remove stem and working parts as a single unit whenever maintenance or inspection is required. There's nothing to unscrew below the ground level!

IMMEDIATE SHIPMENT!

HUB END VALVES

Double Gate—A.W.W.A. Specifications 2 in. to 12 in.

Also Normal Delivery on Valves in Larger Sizes and *Rapid Delivery* on Hydrants.

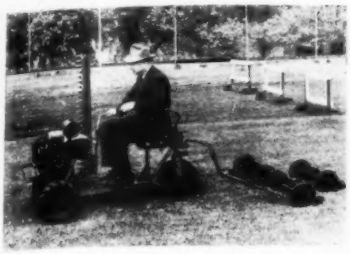
H-71

THE LUDLOW VALVE MFG. CO., INC., TROY, N.Y.

LUDLOW HYDRANTS

Superior Features Since 1866

Year-Round Mower



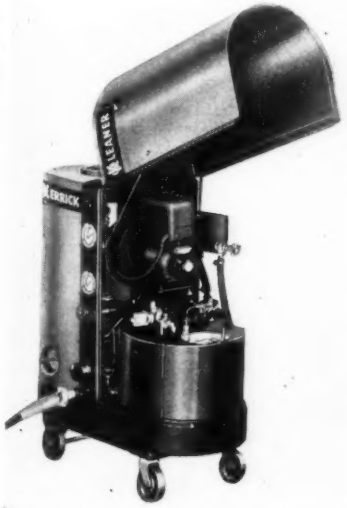
Municipalities that have the problem of keeping down weeds and heavy brush on vacant lots and roadsides and of regular mowing of parks, athletic fields, and other outdoor plots will be interested in a new easy-to-operate all-purpose mower designed and manufactured by the Flink Co., Streator, Ill.

Since the device can be equipped with a grader and snow-plow attachment, or with a tow bar and front hitch and lawn mowers, it has year-round usefulness.

These Flink-Rawls Power Sickle Mowers have a high degree of maneuverability and a speed range of from three to thirteen miles per hour.

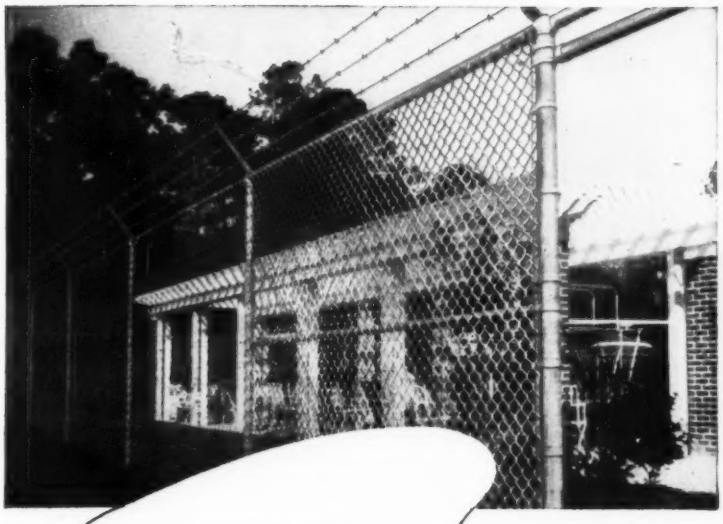
Clayton's New Cleaner

The Clayton Mfg. Co., announces its first new post-war product, the Model C Kerrick Kleaner.



The Model C Kerrick Kleaner is self-contained in a vapor- and dust-proof cabinet. When the hood is lifted, as illustrated above, all working parts are easily accessible.

The new medium-duty steam cleaning machine has an automatic soap injector, pressure atomizing burner, fully insulated fire-box and shell, electric ignition, protective fuel cut-off in case of water failure, and a positive displacement pump which requires no lubrication.



No project's too large or too small for

CYCLONE FENCE PROTECTION

● It isn't the size that counts—it's the importance of fully protecting both your project and the public. Cyclone Chain Link Fence gives you such protection tailored to your particular requirements, because it's available in any amount . . . and in 14 different types.

To get the most from your fencing investment, specify U·S·S Cyclone Fence in your plans. Our engineers are available to help you plan its use with maximum efficiency and economy. And once your fence has been erected by Cyclone factory-trained crews, its special design and construction assure you a firm installation through years of service.

CYCLONE FENCE DIVISION

(AMERICAN STEEL & WIRE COMPANY)

Waukegan, Ill. · *Branches in Principal Cities*

United States Steel Export Company, New York

Send for Free 32-page Book. Profusely illustrated. Full of facts and specifications. Complete information on different types of fence, gates, athletic field equipment, etc. Just mail the coupon.

CYCLONE FENCE DIVISION · American Steel & Wire Co. · USS CYCLONE FENCE · UNITED STATES STEEL

Cyclone Fence
Waukegan, Ill., Dept. B-87

Please send me, free of charge, your 32-page book on Fence.

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UNITED STATES STEEL

KARPARK

FITS THE NEED FOR STAMINA

For the hard work of the range; over rough country; in freezing blizzards and scorching heat ranchers rely on the tough, wiry cowpony — a dependable partner in the work of herding, driving, cutting out, roping and branding. For the day in and day out work of regulating parking, city officials can count on the steady dependability of the durable KARPARK Automatic Meter. Built for stamina and accuracy KARPARK keeps going in bitter cold and torrid heat. With this dependability there is easy automatic operation, easy enforcement, easy maintenance — a round-up of features assuring constant revenue and efficient, trouble-free performance. Write for the whole story.

KARPARK *Automatics*

KARPARK CORPORATION, CINCINNATI 6, OHIO

KARPARKS ARE MANUFACTURED BY THE HERSCHEDE HALL CLOCK CO.

THE WISE CHOICE

SUCCESS

WHERE OTHERS FAIL

O.D. 30 Kills All Odors!

From the **FRONT PAGE OF THE HERALD TRIBUNE**

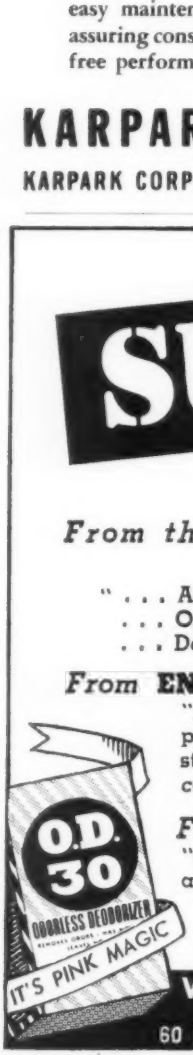
" . . . ANY SMELL CAN BE KEPT DOWN . . .
. . . O.D. 30 has no odor whatsoever . . .
. . . Does not harm human tissues . . ."

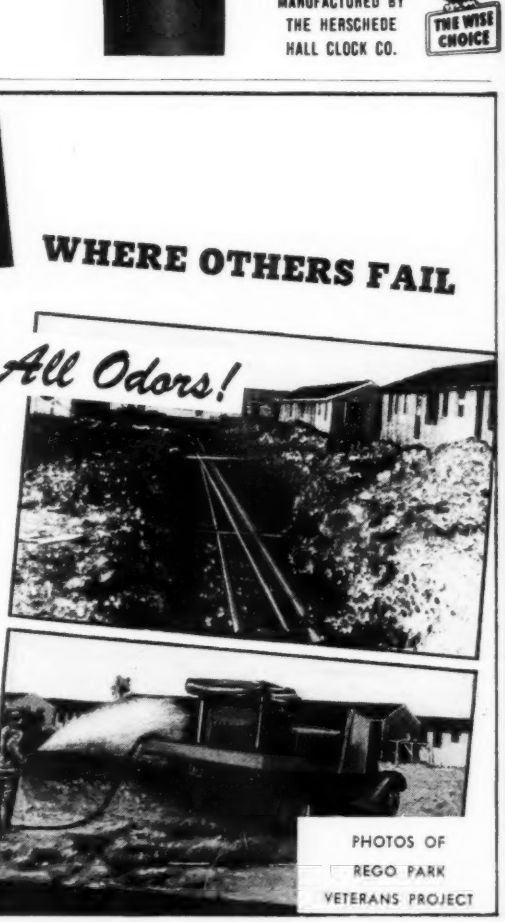
From **ENGINEERING NEWS RECORD**

"At Rego Park a solution of O.D. 30 proved highly successful . . . Powerful stuff, it did the job. And house-building continued . . ."

From the **L. I. SUNDAY PRESS**

"O.D. 30 has been put forward as the answer to the boroughs stench problem."



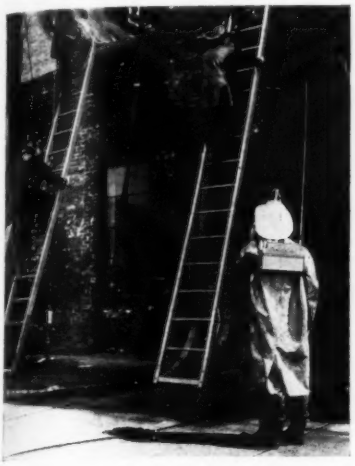


PHOTOS OF REGO PARK VETERANS PROJECT

Write today for your **FREE SAMPLE!**

WONDER WASH CORPORATION
1532-BP
60 EAST 42nd STREET, NEW YORK 17, N. Y.

New Motorola Handie Talkie



By means of the new Motorola Handie Talkie, this fireman can direct men inside and behind the building, warning them of dangers or instructing them in the combatting of the fire. A lapel "mike" with ear-plug is used with this back-pack model.

The new Motorola FM Handie Talkie, available this fall, will now make possible communication between on-the-job workers who, like firemen, policemen, and service men, have need of closer contact in their work. Radio conversation can take place between a policeman investigating trouble in the rear of a warehouse and his partner stationed in the patrol car; a fire marshal can radio impending danger to firemen inside or behind a building. Police officers can control crowds, quell riots, or direct traffic with the new Handie Talkie. Forest rangers, surveyors, construction foremen, all have use for this instrument.

Weighing seven pounds, the unit is a compact crystal-controlled FM transmitter and receiver with standard dry battery supply. It will provide reliable communication in excess of two miles between units. The range is greatly increased when working with central station or mobile units. Designed to operate in the 25-44-mc band, transmission range between units will vary widely, due to local conditions of terrain and noise. Greater distances are obtained when communicating with the central station or mobile units of existing 30-40-mc systems.

There are eleven tubes in the receiver and seven in the transmitter. The complete unit is designed for carrying in the hand, on the shoulder, or as a back-pack, and is manufactured by Motorola, Inc., Chicago 51, Ill.

Cleaning Water Mains

Improvements in the design of water main cleaners and the use of quick make-up devices make possible the cleaning of thousands of feet of pipe, some as small as 6 inches in diameter, in a single operation. The National Water Main Cleaning Co., 50 Church St., New York, N. Y., guarantees to restore mains to at least 95% of their original capacity.

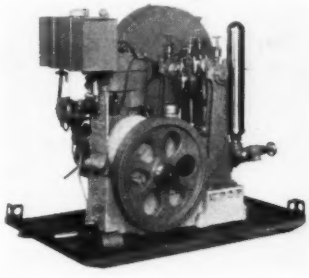
New equipment cleans several sizes of mains with a single machine, allowing miles of mains to be cleaned without the necessity of excavation where diameters change or undersized valves are installed. Special equipment is available for use in Transite and other types of mains where the regular type of cleaner might cause damage. National equipment, such as two-way radio used to maintain contact between point of operation and pumping station, jeep-mounted winches, and trailer-mounted pumps, assure work that is performed in a minimum of time with a maximum of efficiency. Cleaning jobs in mains 30 inches and larger are often followed by a cement lining which helps to insure permanently high coefficients.

Ohmer Changes Advertising Agency

Rockwell Mfg. Co., Pittsburgh, Pa., has appointed The McCarty Co. to handle the advertising accounts of two of its subsidiaries: the Ohmer Corp., Dayton, Ohio, manufacturers of cash registers, fare registers, and taximeters, and the A. H. Ross Co. Inc., Ludlow, Ky., which makes packaging machinery.

William A. Marsteller, Manager of Advertising and Market Research for Rockwell, will direct the over-all program.

PORTABLE FOREST FIRE PUMP



THE GUPTILL PUMP

Here is protection against Forest Fires. A pump designed for dependable service, light and compact enough to be carried, or mounted on a Jeep. A triplex plunger pump delivering full capacity at high pressure.

Write for Information

FITZHENRY-GUPTILL CO.
135 First St., E. Cambridge 41, Mass.

For PARKS, SCHOOLS, GOLF COURSES, AND PLAYGROUND OPERATIONS

get the Facts on the NEW AMAZING

modern LAWN MOWER SHARPENER

For the first time in history, the Modern Lawn Mower Sharpener will sharpen all types of mowers . . . hand, power, gang or fairway unit . . . in from 10 to 20 minutes. From 5-inch edgers to 36-inch power mowers. Dismantling is eliminated. Handle, wheels, roller or motor remain in position when sharpening even the most complicated mower. The Modern Lawn Mower Sharpener eliminates all hand filing. It precision grinds to the extreme ends of both left or right reel blades on any type of mower. Bottom knife is held in same brackets for sharpening. No extra attachments required for grinding.

modern LAWN MOWER SHARPENER

1. Lowers Capital Investment and Reduces Maintenance Equipment Overhead . . . the same unit sharpens all types of mowers . . . hand, power, gang or tractor.

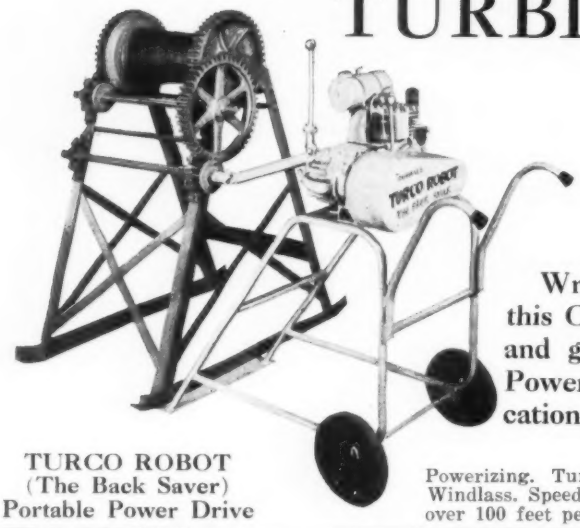
2. Increases Productivity . . . Speeds all sharpening operations . . . Eliminates Hand Filing and dismantling time . . . Automatically precision grinds to 1/1000 inch.

Send for FREE Descriptive Bulletin 25A

modern MANUFACTURING CO.
160 N. Fair Oaks Ave., Pasadena 1, Calif.

Modernize - Powerize - Economize!

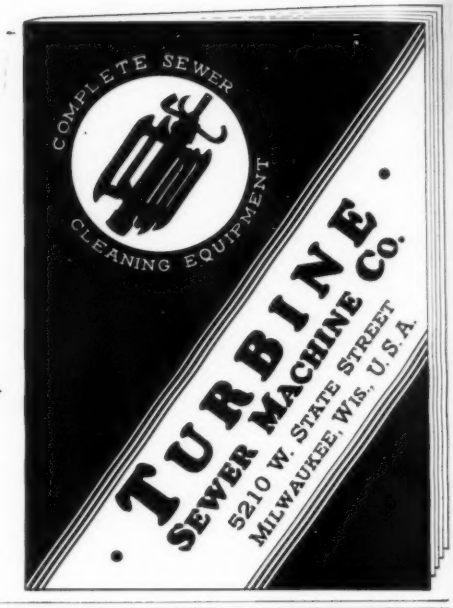
7 Power Sewer Cleaning Units *Offered by* TURBINE



TURCO ROBOT
(The Back Saver)
Portable Power Drive

Write for this Catalog → and get Maxi-Power Specifications.

Powerizing. Turbine Senior Windlass. Speeds from 14 to over 100 feet per minute.



15,000,000 VOTERS IN 3775 CITIES AND TOWNS

FIND THAT CASTING THEIR BALLOTS ON THE

AUTOMATIC VOTING MACHINE IS AS SIMPLE AS A B C

A— Move operating lever to the right which closes the curtains.

B— Turn down the voting pointers over the names of the Candidates (see illustration.)

C— Move operating lever to the left which registers the vote and opens the curtains.

Write for Literature

VOTER TURNING DOWN VOTING POINTERS.

AUTOMATIC VOTING MACHINE CORPORATION

JAMESTOWN 55, NEW YORK

"Builders of Voting Machines Since 1898"

Bronze and Porcelain Combined in Signs

The combination of bronze and porcelain lettering, recently introduced by the United States Bronze Sign Company.

A new technique combining bronze and porcelain in the manufacture of display signs has been developed by the United States Bronze Sign Co., 570 Broadway, New York 12, N. Y.

Cast bronze prismatic letters with a statuary finish are mounted on cream-colored porcelain enameled letters, which are shaped to the same style as the bronze letters, with a margin of ½ inch extending on all sides.

The result is an attractive sign which is especially luminous by day and highly visible by night. This type of sign is particularly economical for use on municipal buildings as only a minimum of lighting at the entrance is required to identify the building.

Gang Elected President of Ludlow Valve

Oliver F. Gang was elected President, Director, and General Manager of the Ludlow Valve Mfg. Co., Inc., Troy, N. Y., succeeding Alfred W. Thompson, who becomes Chairman of the Executive Committee and continues as Treasurer of the company.

AFFILIATED PHOTO—CONWAY
Oliver F. Gang

Mr. Gang comes to the Ludlow Company from the William Powell Company of Cincinnati and New York, manufacturer of valves, from which organization he resigned on June 30th as Vice-president and Consulting Engineer. He joined Powell in 1931. During World War II, he was a member of the Valve and Fittings Industry Advisory Committee of the War Production Board and was a member of the Marine Committee of the Manufacturers Standardization Society.

Previous positions have included the Vice-presidency of the Valve Manufacturers Association, and the position of Sales Engineer for the Lunkenheimer Company of Cincinnati.

Craig Elected Vice-president of Asphalt Institute

At the recently held quarterly meeting of The Asphalt Institute, 801 Second Ave., New York 17, N. Y., Wallace D. Craig was elected Vice-president of Division I, heading the Institute's Management Committee of the Atlantic-Gulf area. Mr. Craig is Assistant Manager of Asphalt Sales for the Standard Oil Co. of New Jersey.

At the same meeting, Herbert Spencer was appointed District Engineer for New York and New Jersey of The Asphalt Institute. He will continue as Secretary of the Institute.

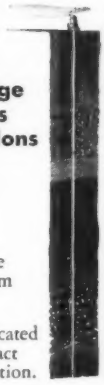
PEERLESS PUMPS
add a "plus"
TO DEEP WELL PUMP PERFORMANCE

Peerless Pumps offer the widest range of water capacities from 15 to 30,000 gallons per minute from all depths

*

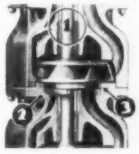
Peerless Pioneered in the development of water from wells of great depth.

Available in water or oil lubricated types. Pre-tested to meet exact conditions of well and application.



Top-Flight Quality Underground From Patented Double Bearing—Double Seal Bowl Construction

Double Bearings (1) one bronze and one Goodrich Cutless Fluted Rubber bearing for each pump bowl add double life to bearings and impeller shaft. Double Seal (2) mounted below impeller neck (3), is a durable, resilient ring — automatically compensating for wear.



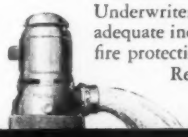
Choice of Pump Drives

Contributing to the over-all operating adaptability of Peerless Deep Well Turbine Pumps are the optional type Peerless drives. Moturbo (electric) heads are available from 1 to 1,000 h.p. Gearturbo (geared) heads range from 1 to 300 h.p. All types are highly advanced in design and are proved through years of operation under every pumping condition. Also furnished are Veeturbo, (V-belt) and Belturbo, (flat belt) and combinations of these drives.

Peerless Turbine design permits wide adaptability to diversified applications

Peerless turbine pumps are the choice of industry and municipalities for an ever dependable source of clean, constant temperature water. Also available: Close-coupled type Peerless Turbine pumps for pumping from shallow pits, sumps, or surface water sources. With proper fittings Peerless Turbine pumps are Underwriters' approved for adequate independent plant fire protection.

Request Bulletins.



PEERLESS PUMP DIVISION
Food Machinery Corporation
Factories: Indianapolis, Indiana • Quincy, Ill. • Los Angeles 31, Calif.
District Offices: Canton 2, Ohio; Philadelphia: Suburban Square, Ardmore, Pa.
Atlanta: Rutland Bldg., Decatur, Ga.; Dallas 1, Texas; Los Angeles 31, Calif.

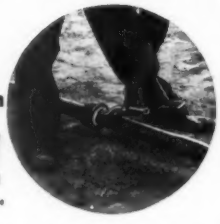
McWane PRECALKED Pipe

IS EASY

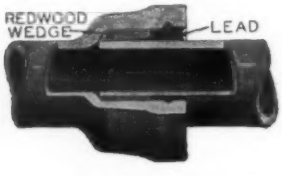
For Even Unskilled Workmen

TO LAY!

"Just Socket the Spigot and Calk!"



Any man can lay McWANE PRECALKED CAST IRON PIPE. No lead melting and pouring on the job. Pure lead and California redwood wedges are placed in the bells at the factory.



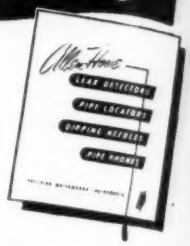
Sizes 2" thru 12"

McWANE CAST IRON PIPE CO.

Birmingham 2, Alabama

Free PRECISION WATERWORKS INSTRUMENTS

NEW CATALOG!



LEAK DETECTORS
PIPE LOCATORS
DIPPING NEEDLES
PIPE PHONES

HOT OFF THE PRESS . . . the brand new catalog of precision waterworks instruments made by Allen-Howe. Complete description of each with specifications, photos and price list. Don't delay . . . this new catalog is FREE

WRITE TODAY!

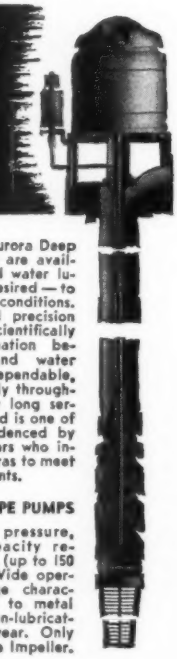
ALLEN-HOWE

PRECISION WATERWORKS INSTRUMENTS

ALLEN-HOWE ELECTRONICS CORP., PEABODY, MASSACHUSETTS

Where *Streamlining* Pays Dividends

DEEP WELL TURBINE PUMPS *"by Aurora"*



Sizes 4" to 24"

AURORA CENTRIFUGALS *for Every Pumping Job*
HORIZONTAL SPLIT CASE *Single & Two Stage*
SIDE SUCTION
VERTICAL
NON CLOG
SUMP
MIXED FLOW
SPECIAL DESIGN
Write for CONDENSED CATALOG "M" *or* Consult SWEETS

These outstanding Aurora Deep Well Turbine Pumps are available in both oil and water lubricated units as desired—to meet all operating conditions. Their sturdiness and precision manufacture plus scientifically streamlined coordination between impellers and water channels insures dependable, low cost water supply throughout an exceptionally long service life. Their record is one of high merit—as evidenced by the many Aurora users who install additional Auroras to meet expansion requirements.

APCO TURBINE-TYPE PUMPS

For high pressure, small capacity requirements (up to 150 g.p.m.). Wide operating range characteristics. No metal to metal contact. Handles non-lubricating liquids without wear. Only one moving part—the Impeller.

DISTRIBUTORS IN PRINCIPAL CITIES

AURORA Always PUMPS

AURORA PUMP COMPANY

66 Loucks Street, AURORA, ILLINOIS

ASPHALT and TAR KETTLES

Fire Proof—Oil Burning

Hand and Motor driven spray.
Many sizes. Write for catalog.

Elkhart White Mfg. Co. Indiana

INFILCO Trade-Mark*

WATER TREATMENT

Send for Bulletin 1824

ACCELATOR*, softens and clarifies

*Trade-Mark Reg. U.S. Pat. Off.

INFILCO Inc.
325 W. 25th Place,
Chicago 16, Ill.

An Altimeter For Speedy Surveys

You can make a close estimate of the engineering feasibility of sewer lines, street routes, water-supply lines, and pumping stations by using an American Paulin System altimeter. These instruments, made in Sweden before the war, are now being produced by this company in the United States.

The instruments permit readings without lag and without loss of sensitivity and accuracy. Type SA-1, with a range of 4,360 feet, will note elevation differentials of two feet. Type SA-2, with a range of 10,600 feet, will note differentials of 5 feet; Type SA-5, with a range of 15,000 feet, will note differentials of 10 feet.

Built for rugged field duty, the instrument is supplied in a leather carrying case. The dial is 4¾ inches in diameter. Indicators are knife-edged, with needle-point design and mirror to eliminate parallax. It weighs 43 ounces complete.

The altimeter is manufactured by the American Paulin System, 1847 S. Flower St., Los Angeles, Calif.

Chlorine Dioxide Has Dual Role

Chlorine dioxide now has a two-way reputation for itself. In addition to its recognized ability to remove certain tastes and odors from public water supplies, it is also an effective bactericide, according to an article in the June issue of the *Journal of the American Water Works Association*. The authors, G. M. Ridenour and R. S. Ingols, of the University of Michigan School of Public Health, state that on the basis of OTA residuals the bactericidal properties of chlorine dioxide are as great as, or slightly greater than, those of chlorine. Of special importance, according to those investigators, is the fact that in contrast to chlorine the bactericidal efficiency of chlorine dioxide is relatively unaffected by high alkalinity.

The authors studied the bactericidal effects of solutions of chlorine dioxide, chlorine, and a mixture of the two on a variety of naturally and artificially polluted waters, and at pH values between the ranges of from 6 to 10. Their results showed that regardless of the character or concentration of organic matter in the contaminated samples used, chlorine dioxide was effective as a bactericide.

While the relative amounts of chlorine dioxide or chlorine required for disinfection varied somewhat with the type and concentration of the organic matter in the sample, lesser OTA residuals were generally required for chlorine dioxide than for chlorine. The average of all samples gave a required OTA residual of less than 0.06 ppm for chlorine dioxide, as against 0.12 ppm for chlorine. Mixtures of the two gave intermediate results.

In studying the effect of alkalinity on bactericidal properties, naturally and artificially contaminated waters at pH values of 6, 8, and 10 were used. Whereas there was little or no increase in the amount of chlorine dioxide required for disinfection at higher alkalinity, the amount of chlorine needed increased by two to three times. Drs. Ridenour and Ingols conclude that this would indicate important applications of chlorine dioxide treatment in waters of high natural alkalinity, those treated to prevent corrosion, and softened waters.

Readers desiring a complete copy of this article on the bactericidal properties of chlorine dioxide can secure it by writing to J. R. Schmertz, Advertising Manager of Mathieson Alkali Works, 60 East 42nd St., New York 17, New York.

INFILTRATION

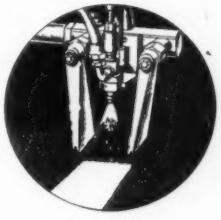
is the Key Word when planning a Public Water Supply. HORIZONTAL INFILTRATION COLLECTORS are the proven means whereby a permanent and adequate supply of infiltrated water can be obtained. The water is cool and free from coliform organisms. The installation is permanent, trouble-free and requires little, if any, maintenance.

For complete details address inquiries to:

RANNEY METHOD WATER SUPPLIES, INC.

63 South High Street Columbus, Ohio

Water Supply Engineers and Contractors



Air Curtain Guide Plates

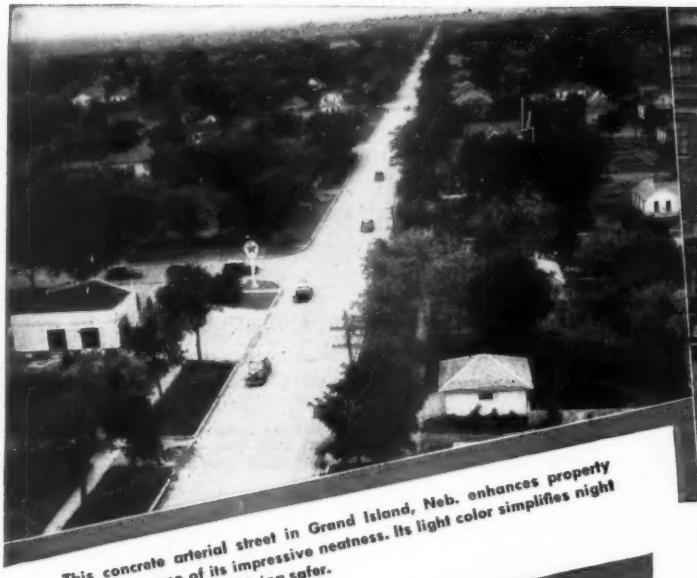
For Perfect Traffic Lines:

AIR CURTAINS, basic feature of all Kelly-Creswell Equipment, make possible the application of clean-cut, attractive lines *without* coming in contact with the surface.

Special striping guns by DeVilbiss, air-actuated traction and pressure-cleaning equipment also feature K-C equipment. These are the reasons why more Highway Zone-marking material is applied through K-C equipment than through any other make.

There is a Kelly-Creswell Model that will solve your zone-marking problems.

KELLY-CRESWELL CO., Xenia, Ohio



This concrete arterial street in Grand Island, Neb. enhances property values because of its impressive neatness. Its light color simplifies night illumination—makes driving safer.

Clean, attractive concrete streets enhance a city's pride in its downtown business section. This concrete pavement in Wichita Falls, Texas, has carried traffic more than 25 years.

CONCRETE

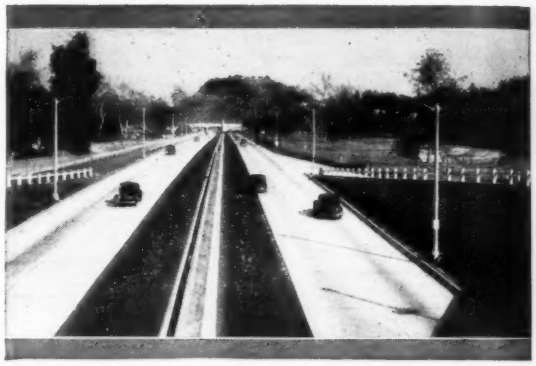
long-lasting low-annual-cost street pavement

Whether for urban expressways, business thoroughfares or residential streets, portland cement concrete pavement can be economically designed for any conditions of load and service.

Concrete pavement correctly designed, usually costs less than any other pavement of equal load-carrying capacity.

Concrete will carry traffic safely for many years with minimum expense for maintenance; render uninterrupted all-weather service at *low annual cost*—the true measure of pavement economy.

Write for latest design information on concrete pavements for roads, streets or airports. Free in United States and Canada.



The concrete pavement on Arroyo Seco Parkway carries, without congestion, heavy traffic between the downtown sections of Los Angeles and Pasadena.

This concrete paved residential street in Augusta, Ga., has given more than 25 years of service. It is still in excellent condition as shown by recent picture.

PORTLAND CEMENT ASSOCIATION

Dept. A8-4, 33 W. Grand Ave., Chicago 10, Illinois

A national organization to improve and extend the uses of concrete... through scientific research and engineering field work

Improved Insulator for Street Lighting Luminaires

A new wet-process porcelain insulator for series street lighting luminaires, featuring a strengthened lip, integral porcelain tie-lugs, and an accurately positioned light center, has been announced by the lighting division of the General Electric Co., Schenectady, N. Y. The insulator, recommended for use with high-voltage aerial wiring, is interchangeable with older designs, making it suitable for standardization programs.

Two petticoats instead of one on the insulator lengthen the external creepage path and double the dry path under rain and sleet conditions. Either internal or external wiring may be used.

General Electric's lighting luminaire, form 45H78O, with clamped-on reflecting shields.

National Clay Pipe Mfrs. Hold Meeting

During the recent annual meeting of the National Clay Pipe Manufacturers, Inc., (an association of forty-four of the nation's leading clay-pipe companies), trends and practices—past, present, and future—were discussed.

Construction costs and advertising plans were considered of primary importance at the meeting. Although the cost of clay pipe is comparatively very low as against other construction materials, it was agreed that the costs would be held as low as rising labor costs would permit.

Faraday Moves Boston Plant to Adrian, Mich.

The Stanley & Patterson Division Boston plant of the Faraday Electric Corp., has been moved to Adrian, Mich., where Faraday's main plant is located. The Boston branch was established in 1945 when Faraday acquired the signal systems business of Holtzer-Cabot Corp., and consolidated it with its Stanley & Patterson Division. The branch will manufacture and continue to engineer fire alarm, hospital, and other signal systems.

This new HEIL
COLECTO-PAK
Municipal Refuse
Disposal Body
gives you

Bucket unloads in less than a minute under fingertip control.

Automatic, hydraulic-operated packer plate packs 20 yds. in a 10-yd. body.

Tapered body construction assures speedy discharge regardless of compression.

★ Low loading height
★ Double capacity
★ Complete enclosure
★ Easy maintenance

The all-enclosed, water-tight Heil Colecto-Pak is the answer to your search for a modern method of speeding-up, simplifying, and improving garbage collection and disposal.

This unit has a ¾-yard loading bucket at a 35-inch height making it extra easy to load. This "power-lifted" bucket deposits load and returns to starting position in less than a minute. At the same time the hydraulic-operated packer plate is compressing the material down toward the discharge end. It is possible to compress 20 yards of wrapped garbage into this 10-yard body.

With this unit your city has a clean, sanitary means of collecting garbage with none of the unsightly and unsanitary features imposed by "open body" collectors. Your city can feel proud of its advanced thinking in purchasing a Heil Colecto-Pak.

BH-114

Write for bulletins.

ARMY NAVY
THE HEIL CO.
GENERAL OFFICES • MILWAUKEE 1, WISCONSIN

AIR PLUS JAEGER COMPRESSOR

JAEGER AIR COSTS LESS

Because of increased fuel economy, low upkeep and much longer compressor life (3 times that of the finest modern engines), the modern Jaeger "AIR PLUS" is delivering air for less than it has ever cost before. Sizes 60 to 500 ft. Ask for Catalog JC-5.

THE JAEGER MACHINE CO. Main Office and Factory Columbus, Ohio

REGIONAL OFFICES
8 E. 48th St. New York 17, N. Y.
226 N. LaSalle St. Chicago 1, Ill.
235-38 Martin Bldg. Birmingham 1, Ala.

PUMPS · MIXERS · LOADERS · HOISTS · PAVING MACHINERY

PROTECTING THE NATION'S RESERVOIRS!

Experts in metal fabrications since 1886

Stewart 3TH Non-Climbable Chain Link Wire Fence assures the utmost in protection for reservoirs and all other public property. Stewart products for protective purposes also include: Wire Window Guards, Wire Mesh Partitions and Steel Folding Gates. When writing for information please mention products in which you are especially interested.

THE STEWART IRON WORKS CO., INC.
1421 Stewart Block Cincinnati 1, Ohio

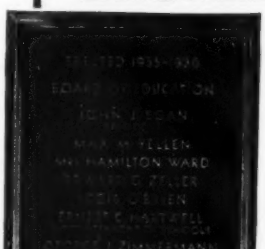
Stewart IRON and WIRE FENCES

GAS STORAGE TANKS

We design, fabricate, and erect safe, dependable tanks for the economical storage of propane and butane gas; also tanks for consumer storage. In addition, we furnish industry with elevated tanks, boilers, and pressure vessels of all types. Our engineering department is at your service. Write for our catalog—"Tank Talk."

R.D. COLE MFG. CO. Newnan Ga. ESTABLISHED 1854

BRONZE TABLETS



For Every Municipal Need

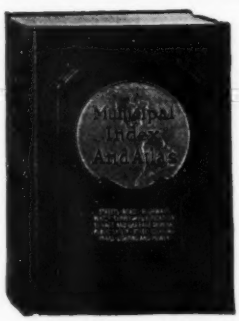
Municipal Buildings, Hospitals, Homes, Courts, Schools, Art Centers, Statues, Cornerstones, Doorplates, Signs.

Send for illustrated catalog with complete "order-by-mail" information.

UNITED STATES BRONZE SIGN CO., INC.

"Bronze Tablet Headquarters"

Dept. AC, 570 Broadway, N.Y.C. 12



"WHO'S WHO IN MUNICIPAL SUPPLY"

is an important feature of the THE MUNICIPAL INDEX consisting of brief messages to municipal officials from all the manufacturers, who are sufficently interested in governmental business to contribute a functional statement about what their products can do for city officials. If you do not have the latest Municipal Index on hand please let us know.

THE MUNICIPAL INDEX
470 Fourth Avenue New York 16, N. Y.

Snow Removal or Earth-Moving

Boom maneuverability of the Gradall makes it possible for the machine to work easily under low wires and around obstacles.

While its first usefulness is in precision grading, trenching, ditch-cleaning, or pavement-ripping, Warner & Swasey's Gradall is capable of turning in a first-class performance in snow removal.

The multi-purpose machine consists of a truck chassis mounting a rotating turntable furnished with a 24-foot telescopic boom. A variety of interchangeable tools may be attached to the end of the boom, which may be extended and retracted, lowered and raised, tilted each way from the horizontal, and rotated a full 360 degrees.

Hydraulic controls located in the operator's cab are sensitive enough to permit the detection of hidden obstacles.

The Gradall is manufactured by The Warner & Swasey Co., 5701 Carnegie Ave., Cleveland, Ohio.

Schum District Manager For Nordberg

E. C. Schum has been appointed District Manager with headquarters at Kansas City, Mo., by Nordberg Mfg. Co., 3073 South Chase Ave., Milwaukee 7, Wis.

E. C. Schum

Mr. Schum, a graduate of Cornell University with a degree in Mechanical Engineering, entered the Engineering Department of Nordberg in 1935, and was engaged in diesel-engine design and testing. Four years later he transferred to the sales department. Following his release from service with the United States Navy, Mr. Schum covered the north central territory for Nordberg as Diesel Sales Engineer.

LEAD GOOSE NECKS

Here is a lead goose neck which has all the qualities to meet the most rigid requirements. It's by McDonald . . . and that means the latest in precise engineering and modern manufacturing processes plus skill and craftsmanship based upon the experience of 91 years. These quality goose necks have hand wiped joints, shaped and finished by experts, and are available in ½, ⅝, ¾, 1, 1¼, 1½ and 2 inch sizes. Remember—for the best in waterworks goods—it's McDonald.

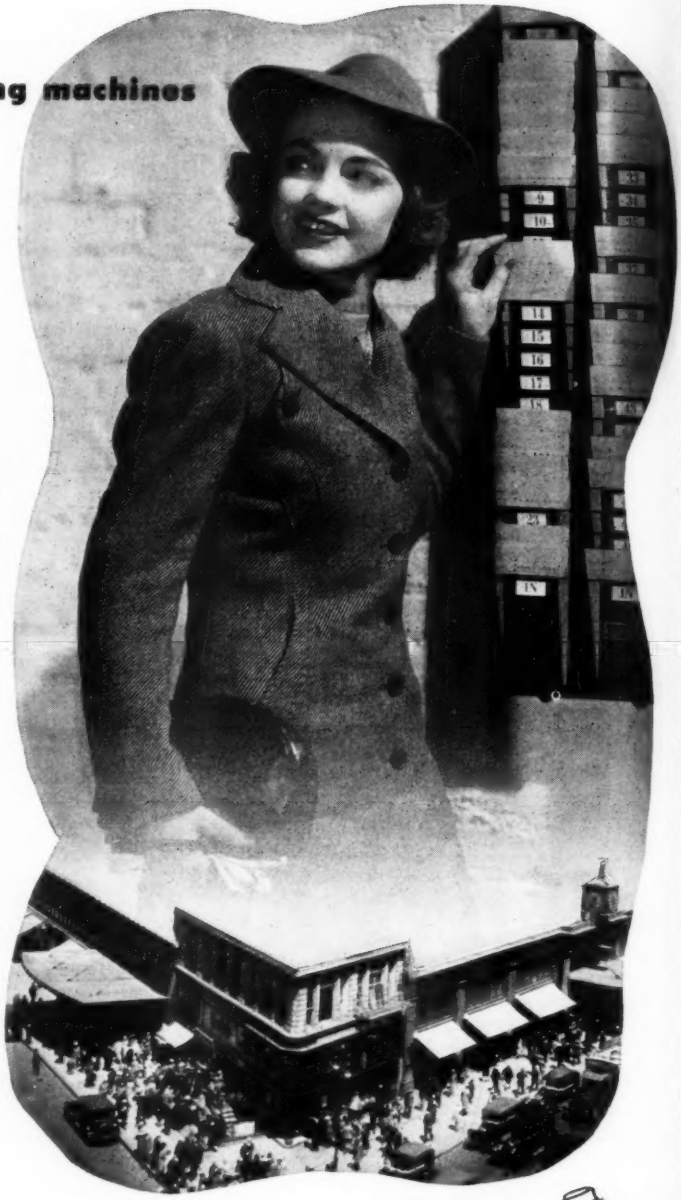
EST. 1856 McDonald

A. Y. McDONALD MFG. CO.
DUBUQUE, IOWA
BRASS GOODS • PUMPS • OIL EQUIPMENT

Remington Rand bookkeeping machines

reduce payroll administrative costs

for cities and states



58,000,000 workers in American industry today necessitate streamlined and mechanized payroll accounting for efficient administration. Whatever the size of your municipality, deductions for social security, withholding taxes, pension plans or insurance premiums mean that your payroll procedure must be accurate, fast, informational and controlled.

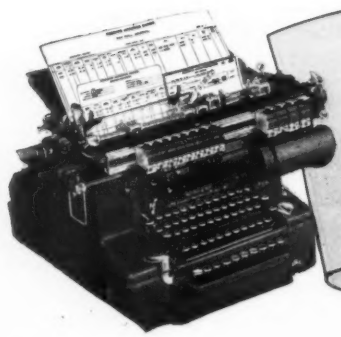
Remington Rand bookkeeping machines provide the special features to solve your payroll problems. Every form you require—payroll register, statement, pay check or envelope, individual earnings record, etc., is prepared at one operation.

Individual, adjustable registers accumulate each deduction separately. Cross computing registers compute and print the net pay automatically. Completely electrified alphabet, numeral and operating keys speed each operation. Checks are numbered, dated and "protected" automatically!

Let your Remington Rand specialist show you how this machine works on your payrolls. Write to Remington Rand Inc., Adding-Bookkeeping-Calculating Machines Division, Department AC, 315 Fourth Avenue, New York 10, New York

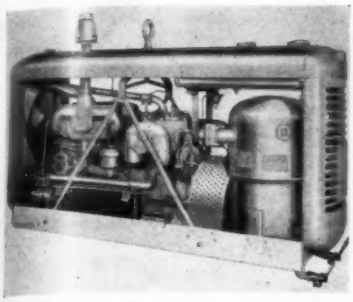
Remington Rand

Machines for Government Administration



Whatever your size...

200 employees or 20,000 . . . complete electrification and balances computed and printed automatically are just two of the many Remington Rand features to help you eliminate waste effort in your payroll administration—give you extra facts and figures for departmental and management control.



The Le Roi 105 Utility air compressor.

Public Utility Compressor

The Le Roi Co., Milwaukee 14, Wis., announces its latest "Airmaster" compressor, known as the 105 utility.

Specifically designed for either back of cab or on the platform of utility trucks, the 105 is entirely self-contained, weighs only 1,700 pounds, and requires an area of 82 inches by 25 inches.

Liquid-cooled, the compressor is regulated by the Le Roi patented Econotrol, which governs compressor capacity automatically according to the demand for air. It has replaceable cylinder sleeves and precision bearings. A lifting bail, 6-volt electric starting system, and the exclusive electric hourmeter on a centralized control panel, are supplied as standard equipment.

Small Power Roller

The Steel Equipment Co., 2890 East 83rd St., Cleveland, Ohio, has put on the market what it believes to be the smallest roller ever specifically designed for rolling lawns, driveways, golf courses, ball fields, and other areas where full-size rollers would be impractical.

Almost entirely of all-welded steel construction, the pony-sized roller weighs about 1,500 lbs., has a 3.5-foot wheelbase, and a 42-inch body width. Weight can be increased when desired by adding a 600-pound concrete block in the machine bed.

The engine is of the single-cylinder, air-cooled type, developing approximately 6 hp at 2,600 rpm.

This miniature roller does a man-sized job, obtaining speed variations of from 60 to 150 fpm.

APCO-V-APCO
PRIMERS
AUTOMATIC
POWER
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AIR RELEASE
VALVES
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30 W. Washington St.
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NIAGARA *for Hard Water*
AMERICAN *for Soft Water*

● Hard water acts like an electrolyte. A galvanic action occurs when iron and a copper alloy are both used in a water meter measuring hard water. Minute currents flow from the bronze working parts to the iron case. This action minimizes corrosion of working parts. If deposits occur, they tend to form on the casing where they do no harm.

In most types of hard water, the Niagara galvanized iron case meter is usually recommended. In softer water where the pH is below approximately 7.5, and for most water obtained from surface sources, the American with bronze case is commonly specified.

50 years' experience proves that both models are necessary and each has its proper place.

Send for literature on the design of Niagara, the successful galvanized iron case meter.

AMERICAN
BRONZE CASE
NIAGARA
GALV. IRON CASE
WATER METERS
BUFFALO METER COMPANY
2902 MAIN STREET • BUFFALO 14, NEW YORK
Simplicity

Signs of DANGER

The Miro-Flex traffic control sign stands guard 24 hours a day. Galvanized on bonderized steel, with a baked enamel finish, it's built to stand the weather.

Prevent street and highway tragedies by choosing a sign that's easily seen, easily read. That's Miro-Flex, America's finest complete sign line. Available plain embossed or reflectorized, with glass or lucite buttons. Get your catalog TODAY.

847

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MIRO-FLEX COMPANY

1824 EAST SECOND STREET · WICHITA, KANSAS

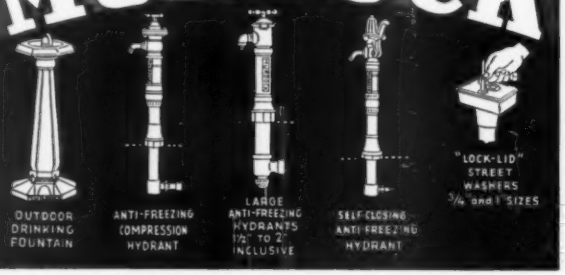
WHY BRONZE AND BRASS?

The kind of service that they must give and the abuses that they must resist make the use of Bronze and Brass for the inner working parts of MURDOCK Fountains and Hydrants absolutely necessary.

Result: Municipalities get YEARS of service from them and taxpayers get full value for taxes invested in MURDOCK Outdoor Water Service Devices.

The Murdock Mfg. & Sup. Co.
Cincinnati 2, Ohio

MURDOCK


OUTDOOR DRINKING FOUNTAIN
ANTI-FREEZING COMPRESSION HYDRANT
LARGE ANTI-FREEZING HYDRANTS 1½" TO 2" INCLUSIVE
SELF-CLOSING ANTI-FREEZING HYDRANT
"LOCK-LID" STREET WASHERS ¾" and 1" SIZES

HEAD CITY PLANNER WANTED

The City of Detroit is urgently in need of a person trained and experienced in city planning design or related fields to coordinate and supervise the design sections of the City Plan Commission.

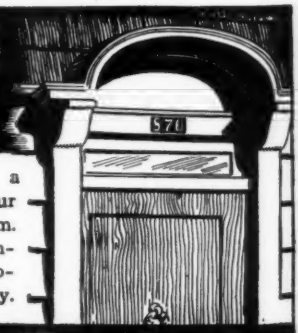
The City of Detroit is now entering the administrative phases of its master plan development. This position offers to the man who is able to produce results on schedule an excellent opportunity to play an essential part in putting the parts of the master plan into effect over a long term.

Salary range is from $6,821 to $7,649, per year.

For further information address the

DETROIT CIVIL SERVICE COMMISSION
15th Floor, Water Board Bldg., Detroit 26, Mich.

PROPER HOUSE NUMBERING



There is a right and a wrong way to plan your house numbering program. Premax Stamped and Embossed Metal Numbers provide the necessary legibility.

Premax Products

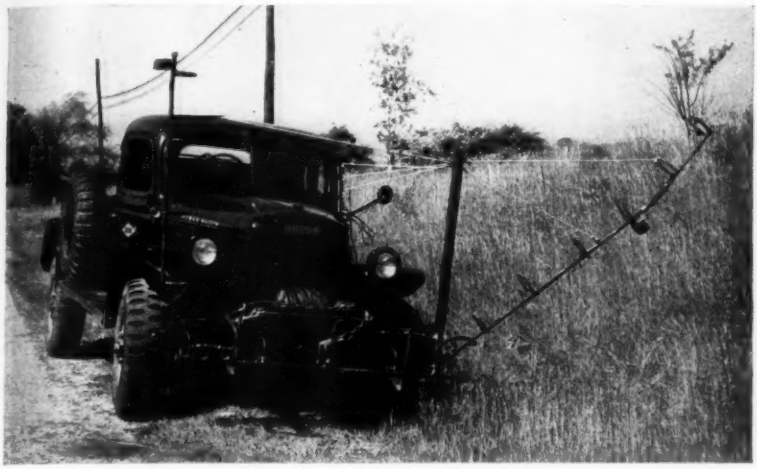
Division of Chisholm-Ryder Co., Inc. 3838 HIGHLAND AVE. NIAGARA FALLS, N.Y.

Hand-made Spray Boom Kills Weeds

Inexpensive and simple to operate, a new hand-made spray boom for application of 2,4-D or other weed killers along highway rights of way was designed by weed-control technicians of The Dow Chemical Co., Midland, Mich., who claim it can be installed on any truck for approximately $200, including pipe, nozzles, a turbine-type pump, and an air-cooled engine. Such equipment is usually available in highway maintenance shops.

The central portion of the rig is mounted in fixed position on the truck bumper. Sections extending beyond the width of the truck can be raised or lowered to any angle by manipulating clothes-lines from the cab. Flexibility is attained by a hose connection covered by a spring.

The boom is 20 feet long and has fan nozzles 16 inches apart. Spray elbows are attached to the pipe by ¼-inch couplings sawed in half and welded on. The engine and pump are mounted on the rear of the truck adjacent to 55-gallon drums containing spray material. The boom can be detached and reassembled in 10 minutes.



The Dow hand-made spray boom, shown here with part of the boom elevated for bank spraying.

Power Units for Lawn Mowers

The Lawn O Matic power unit—1-hp gasoline engine on the six-bladed Airolite "6" mower—may be installed on any conventional lawn mower. Weighing 65 pounds, this driving mechanism employs a fully enclosed automotive differential and imparts forward motion through friction wheels engaged by raising the handle. In this way, slipping belts and pulleys and the danger of chain drives are eliminated.

The Lawn O Matic is manufactured by the Curmar Mfg. Co., Long Beach, Calif.

Sanding Icy Streets

The Hydraulic Engineering Co., Waukesha, Wis., has begun production of its Hydraulic Road Sander, a unit which is attached to the rear of the dump body of any auto truck with a power take-off. With the body elevated, the sand is carried by an agitator to an opening where the abrasive falls into a rotating distributor that spreads the sand, cinders, or chemical evenly on the highway. A portion of the material is thrown ahead of the rear wheels, providing traction during the operation.

The Road Sander can be started or stopped instantly while the truck is in motion since the unit is controlled hydraulically. An exclusive feature of the Hydraulic Road Sander, according to the manufacturers, is the positive regulation of the amount and direction of sand that is thrown.

An added safety feature is a pressure relief valve which stops the spreader if any bricks, stones, or other obstructions occur, preventing damage to the spreader.

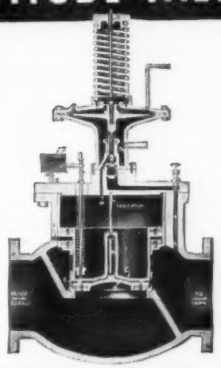
This unit may also be used for seal-coating black-top roads and for spreading lime in fields.

Cary Elected Executive Vice-president

Joseph B. Cary, a Vice-president and Director of the Food Machinery Corp., San Jose 5, Calif., and former President of the company's Niagara Chemical Division, was elected Executive Vice-president of the Corporation, assuming his duties August 1. Ernest Hart, formerly Vice-president and Sales Manager of the Niagara Chemical Division, was made Manager of the Niagara operation and elected a Vice-president of Food Machinery.

Joseph B. Cary

AUTOMATIC "STOP-STARTER"
GOLDEN-ANDERSON
ALTITUDE VALVES



Eliminate all water surges and shock

Installed where a single line is used for both supply and discharge, the valve will maintain a constant water level within 3" to 12" variation and by means of the "stop-starter" switch stops the pump as the valve closes.

Let GOLDEN-ANDERSON Engineers, Solve your Flow Control Problems!

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GOLDEN-ANDERSON
VALVE Specialty Company
PITTSBURGH 22, PA.

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WATER DEPT. OPERATIONS
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GARBAGE DISPOSAL
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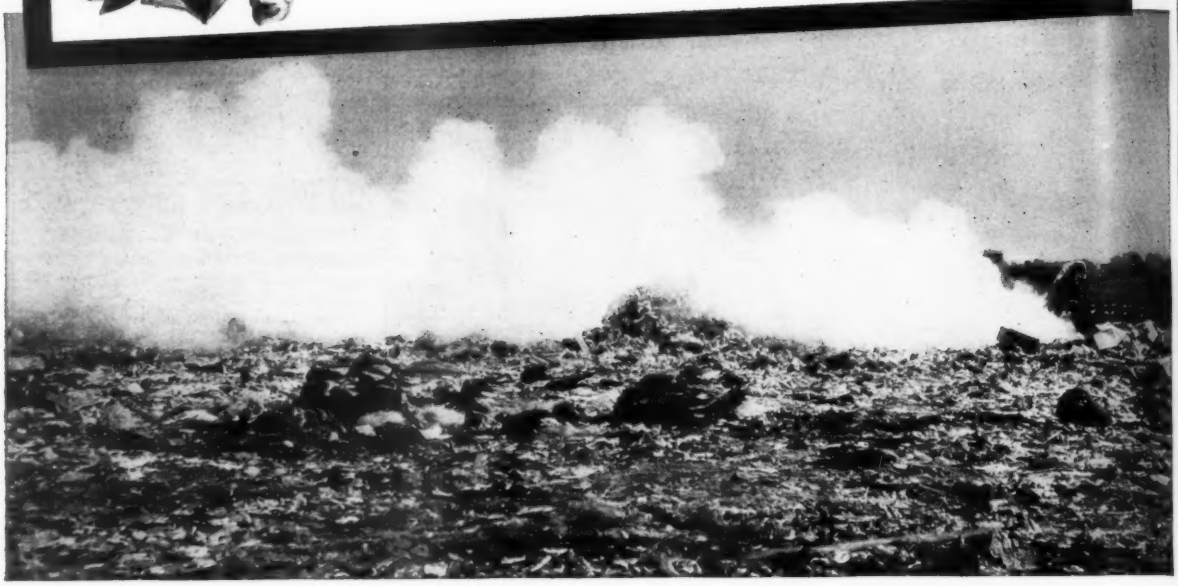
OVER 20 YEARS' SERVICE

C.T. GILLIAM & ASSOCIATES
6311 NORTH FIGUEROA ST.
LOS ANGELES 42 • ALBANY 4545

XUM

"Yes, sir . . . THAT TIFA FOG GETS THOSE PESTS!"

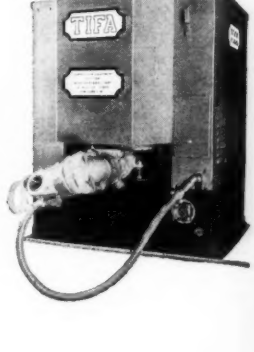


. . . DEATH-DEALING FOG FOR INSECTS

TIFA is the *Quick . . . Sure . . . Economical* method of insect pest control.

TIFA discharges newly developed as well as the older insecticides, fungicides, repellents or hormones in a *true fog* that *spreads quickly* over a wide area . . . *clings* to all objects in its path . . . *permeates* the smallest crevices.

TIFA . . . a compact, easily handled one-man unit, powered by a standard-make gasoline engine . . . can be used wherever insect pest control is essential to public health and welfare . . . on garbage or fill dumps, on beaches, in parks, resorts, and swamps. And it's BUILT TO LAST.



TIFA

TODD INSECTICIDAL FOG APPLICATOR

Write for illustrated folder on sensational TIFA—full details on how it operates, what it does, and official comments on its astonishing effectiveness.

A Product of

COMBUSTION EQUIPMENT DIVISION

TODD SHIPYARDS CORPORATION

81-16 45th Avenue, Elmhurst, Queens, N. Y.

New Sales Divisions For Line Material

Two new sales divisions have been formed by the Line Material Co., 800 North 8th St., Milwaukee, Wis., replacing its Midwest Division.

R. C. Boyles

The North Central Division, under the supervision of J. E. Johnson, embodies Wisconsin, Minnesota, North and South Dakota, parts of Nebraska and Iowa, and the upper part of Michigan. Headquarters for this territory will be at Minneapolis, Minn.

R. C. Boyles, formerly of Line Material's District Office at Tampa, Fla., has been appointed Manager of the Central Division, which includes Kansas, Missouri, Illinois, and portions of Nebraska and Iowa, with headquarters at the company's Kansas City, Mo., plant. Mr. Boyles' former position will be taken over by C. W. Ashby. Previously, Mr. Ashby was connected with C. B. Rogers & Associates as Sales Engineer.

J. E. Johnson

Pa. Turnpike to Be Expanded

The Pennsylvania Turnpike Commission, which built and is studying a plan to expand the Pennsylvania Turnpike, recently retained Gannett Fleming Corddry and Carpenter, Inc., Harrisburg, Pa., as its consulting engineers to survey, lay out, and estimate the cost and probable toll receipts of the 120-mile extension from the Turnpike's present eastern terminus near Carlisle to the planned terminus at Philadelphia.

Tournapull for Small Jobs

The new self-loading D Tournapull is particularly applicable for small yardage projects. Finger-tip control of all operations are handled by the driver from the dashboard.

An electric motor operates a steering gear on the yoke king-pin, locking the Tournapull and Carryall into a single unit. The rig keeps on traveling in the desired direction, regardless of underfoot conditions, until the operator pushes a button to turn right or left. Selected 2-speed steering gives positive control of all operations.

The manufacturer has recently issued Form No. TP-136, a large broadside illustrating and describing the design features of the D Tournapull. It may be obtained by writing the Customer Relations Division, R. G. LeTourneau, Inc., Peoria, Ill.

Now M-B POWER GRADER

In the new M-B Power Grader, Meili-Blumberg Corporation, makers of construction and industrial equipment for the past twenty-five years, have combined many new features around International Power to give users low cost road and street maintenance and, with the full line of attachments, an all-year tool. Check these features:

1. Hydraulic power direct on moldboard gives maximum blade pressure.
2. Handles all types of maintenance fast — 2 to 16 miles per hour at low cost.
3. All blade and attachments controlled from operator's platform.
4. Worm gear center-post steering for ease of operation.
5. Big 12 x 38 low-pressure tires turn engine power into PUSH.
6. Powered by big 40 H.P. International Tractor.
7. Husky all-welded frame — resists twisting.
8. Balanced weight means easy steering, steady traction, with approximately 7500 pounds blade pressure.
9. Built rugged to do tough jobs.
10. Attachments for every job — scarifier, snow plow, bulldozer, leaning front wheels, all-weather cab.

M-B MARKER

10 TIMES FASTER THAN HAND STRIPING . . . . .

Does slow, tedious hand striping make it impossible for you to keep up with today's traffic demands? Does it endanger your safety record? Then consider using M-B Street Markers. With an M-B Marker, one man stripes ten times as fast as the man marking by hand. The machine handles ALL types of striping . . . can also be used as an all-purpose paint sprayer. Requires no experience. Hand-propelled or self-propelled models.

Complete Markers for Industrial, Street and all Highway Marking jobs. Ask for Bulletin No. 121.

MEILI-BLUMBERG CORP.

BOX A-8, NEW HOLSTEIN, WISCONSIN

PITTSBURGH ERIC PROCESS

Sample of Eric Process coated pipe removed from main in Liverpool, England. Note that tubercles and deposit are almost completely lacking after ten years of service.

Protects the Equity of Your Water Main Investment

CLEANS AND LINES Small Mains in Place!

Pittsburgh-Eric Process combines modern, scientific pipe cleaning methods with an ingenious process of lining water mains with bitumen. This combined service not only restores tuberculated and incrustated mains to fullest capacity . . . in addition, it lines the pipe with a protective coating that resists corrosion and adds years of service to water distribution systems.

Authorities estimate that $60,000,000 worth of pipe carrying capacity is lost annually because of tuberculation and incrustation within municipal water mains. If your community is sharing in this huge loss because of inefficient, tuberculated and incrustated water mains, it will pay you to learn more about a Pittsburgh-Eric Pipe Reconditioning Program. Just call our nearest office for the full details TODAY!

For Water Mains 3" to 24" In Diameter

An Integrated Engineering and Operating Organization Serving Communities Everywhere in the Restoration of Water Main Efficiency.

PITTSBURGH PIPE CLEANER COMPANY

133 Dahlem St., Pittsburgh 6, Pa.

PHILADELPHIA · BALTIMORE · WASHINGTON · NEW YORK · BUFFALO · CHICAGO · CINCINNATI · ST. LOUIS · DETROIT · BOSTON

Kills Weeds Without Harming Grass

The du Pont Co. now manufactures a 2,4-D weed killer in handy tablet form, called "Karmex." It kills lawn weeds without harming most grasses.

One tablet dissolved in two quarts of water makes enough solution to kill the weeds in 100 square feet of average lawn. All that is required is to sprinkle or preferably spray the solution on weed-infested areas. Karmex selective action kills dandelion, plantain, wild onion, and many other common lawn weeds, but leaves the grass alone. It is not recommended for use on bent grass.

For tougher growths like poison ivy, poison oak, sumac, chokecherry, and other woody perennials, du Pont manufactures "Ammate" weed killer. Ammate kills roots and all, but it is not for lawns.

For literature on either of these products, write to E. I. du Pont de Nemours & Co. (Inc.), Graselli Chemicals Dept., Wilmington 98, Del.

Small Hydraulic Bulldozer Manufactured by Caterpillar

The Caterpillar No. 4S, straight type, is the latest and smallest of four sizes of hydraulically controlled bulldozers to be placed on the market by the Caterpillar Tractor Co., Peoria 8, Ill.

The 4S combines the accepted blade features of the earlier Caterpillar cable-controlled bulldozers and the advantages of a closed hydraulic system developed to a high state of efficiency. New features of 4S, which can be used effectively for snow removal, street and highway development, culvert work, haul road construction and maintenance, and brush clearing, include:

Front-mounted, positive-action, balanced-vane pump, integral with tank and operating valves.

Manually operated, three-position control valve with "raise," "lower," and "hold" positions.

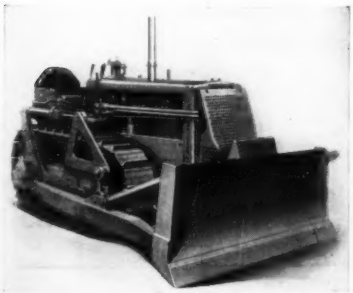
Interior steel surfaces of the entire system given non-corrosive Parcolubrite treatment for maximum operating efficiency and wear resistance.

Carburized pins connecting the pistons, cranks, and push arms.

Rapid blade action, 1.25 feet per second.

High-pressure hydraulic hose, reinforced with two plies of steel wire, offering resistance to heat, oil, and inclement weather.

The No. 4S is offered with an 86½-inch blade for the 44-inch-gauge D4 tractor and with a 98½-inch blade for the 60-inch-gauge D4 tractor. The blade has a 31-inch maximum lift above the ground and an 11¼-inch drop below the ground. Maximum blade pitch adjustment is 10 degrees and the maximum tilting adjustment is 8 inches. The hydraulic system has an operating oil pressure of 300 pounds per square inch and a maximum oil pressure of 850 pounds.



A heavy steel guard protects the front-mounted hydraulic pump housing on the Caterpillar No. 4S bulldozer.

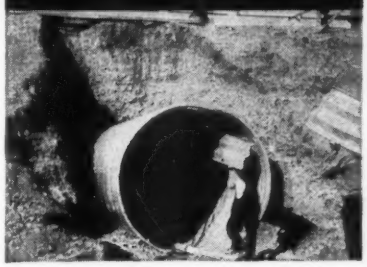
Protects METERS from FROST

Hundreds of thousands of Ford Double-lid Meter Box Covers are in service providing security from frost damage to water meters. In climates where protection against freeing is a problem this cover furnishes the extra insulation required. Ask for catalog giving complete and useful information.

The FORD METER BOX COMPANY, INC.
Wabash, Indiana

No. 11

"HOLE THROUGH" ahead of schedule



Have you heard about ARMCO Tunnel Liner Plates for faster, more economical tunneling? Here's the simplest, most inexpensive way you ever saw to install new sewers and other underground structures.

These sturdy, corrugated liner plates are designed to assure safe strength without excessive bulk or weight. One man can easily handle the light-weight steel sections, bolting them together with ordinary wrenches. Costs are low and the work moves fast.

With ARMCO Liner Plates you gain added safety, fire protection and avoid the delays, hazards and inconveniences of open trenching. Business above ground continues as usual. And because you buy *sinewy strength* — not bulky pounds — there is less excavation, and storage requirements are smaller.

Consider tunneling that next job with the aid of ARMCO Liner Plates. Motorists and property owners will thank you and the chances are you'll "hole through" ahead of schedule and under the estimate. Write for complete information. Armco Drainage & Metal Products, Inc., 2735 Curtis Street, Middletown, Ohio.

ARMCO

ARMCO TUNNEL LINER PLATES

Ever wish you were Aladdin?

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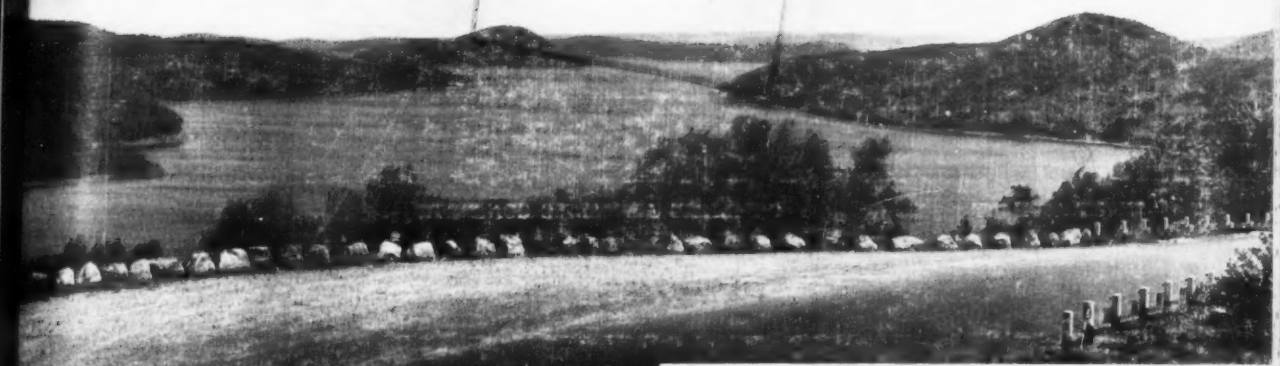
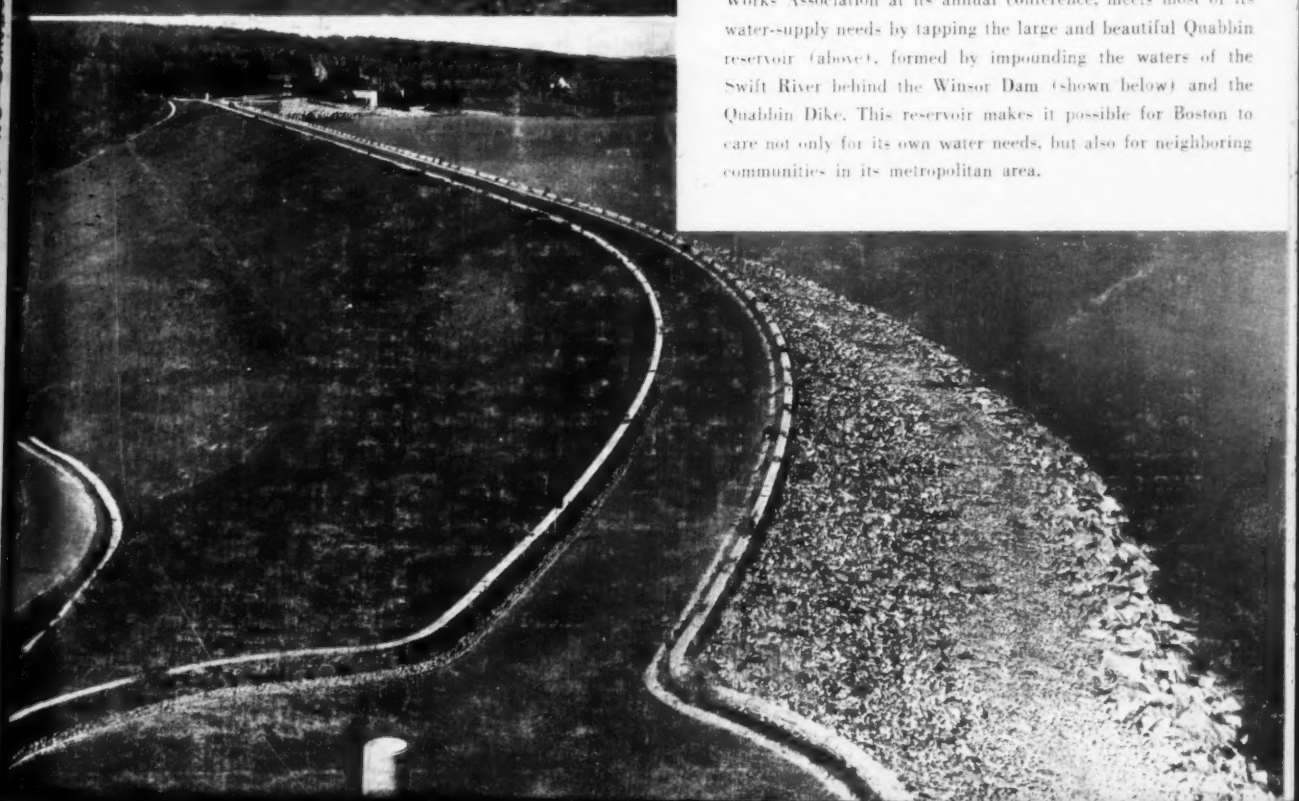


NINETY-NINE YEARS AGO, Boston celebrated the opening of its first important publicly owned water-supply system—an opening marked by the ringing of bells, a 100-gun salute, a general celebration, and a monster parade. The event meant the tapping of Lake Cochituate and the introduction of this water into Frog Pond in the Boston Common.

Today Boston, playing host to the New England Water Works Association at its annual conference, meets most of its water-supply needs by tapping the large and beautiful Quabbin reservoir (above), formed by impounding the waters of the Swift River behind the Winsor Dam (shown below) and the Quabbin Dike. This reservoir makes it possible for Boston to care not only for its own water needs, but also for neighboring communities in its metropolitan area.